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FINANCIAL INCLUSION AS A PILLAR OF SUSTAINABLE GROWTH: INTERNATIONAL EXPERIENCE

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As proposed by the current theoretical framework, the fact that the economic growth of a country depends not only on the formation of physical and human capital and the sustainable exploitation of its natural resources, but also on the financial inclusion that allows economic agents to find solutions to liquidity restrictions and channel savings towards productive investment is exhibited in this paper. By matching multiple databases, static and dynamic panel estimates are developed, verifying the robustness of results and the endogenous nature of economic growth. The current research demonstrates that social inclusion is not only the desired result of economic growth, but a required input for its future sustainability.

Keywords: financial inclusion, sustainable economic growth

JEL Classification: G21, O40

INTRODUCTION

The economic growth study explores inputs accumulation and their interrelationship with the product under the influence of the existing sociopolitical framework. In this context, and with the goal of suggesting the unconventional elements that might affect such a process, the subject matter of this research is financial inclusion and its possible connection with economic growth. Currently, access to financial products is a global priority: more than 50 nations have adopted an important strategy in this regard, and, under the United Nations' Sustainable Development Goals, it is considered to be the key factor against poverty. In this context, the paper is aimed at showing that, as the current theoretical framework proposes, the economic growth of a country depends not only on the formation of physical and human capital and the sustainable exploitation of its natural resources, but also on the financial inclusion that allows economic agents to find solutions to liquidity restrictions and channel savings towards productive investment.

The questions raised in this research study and intended to seek answers are as follows: How is financial inclusion measured and why is it different from financial penetration? If there is a significant relationship between both of them, what are the most common channels through which financial

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inclusion boosts economic growth? The hypothesis to be tested is as follows: the economic growth of a country depends not only on its physical and human capital formation and the exploitation of its natural resources, but also on the financial inclusion that allows economic agents to solve liquidity constraints and channel savings towards productive investment.

In order to obtain the results that might generally be applied both of a temporary nature and transversely as well, the study takes into account a sample of 40 countries during an 11-year period, leading to the use of panel modeling. Additionally, the specialized literature shows that these relationships occur bidirectionally, thus suggesting that the starting point is from the static panel that detects them, and that they are finally estimated by the dynamic panel, which reflects the endogenous character of growth according to the current theory of economics, simultaneously constituting a satisfactory econometric framework which allows the verification of the robustness of the selected explanatory variables.

The models are estimated according to the Cobb-Douglas production function that incorporates financial inclusion in addition to the traditional factors outlined in the scientific literature in order to distinguish the effects of the variable of interest from those of control. This will enable the verification of whether the Solow residual present in all the estimated economic growth models is reduced by the introduction of a variable of this kind, which is used the most in the development study framework, or not. Meanwhile, the importance of savings and their correct channeling towards capital formation in a broad sense is corroborated as the core economic dynamism gear. This would also lead to the affirmation of the United Nations (UN, 2016) that outlines that equity and social inclusion are not only a desirable result of economic growth, but an essential input for its sustainability, which is the main argument of this research study.

This paper is divided into three sections. In Section One, the theoretical framework for economic growth and its connection with the inclusion concept, with an emphasis on financial inclusion, is briefly reviewed. In Section Two, the research methodology justifying the techniques applied in order to estimate the macro-econometric models included herein is presented, whereas in Section Three, the empirical data are described and the results are discussed so as to ultimately establish generalized conclusions at the international level, still taking into consideration the limits present in this type of analysis and seeking to provide recommendations and possible future lines of research.

THE THEORETICAL FRAMEWORK: ECONOMIC GROWTH AND FINANCIAL DEVELOPMENT

Classical economics sought to discover the natural, demographic, technological, political, social, cultural, and moral characteristics of the society that had managed to accumulate wealth and improve the life of its population. In the mid-19th century, the marginalist revolution defrosted analysis into the microeconomic sphere - the efficient allocation of resources and their utility.

The study of macroeconomics was paused until the Great Depression and the emergence of the Keynesian theory, which analyzes short-term phenomena, such as the economic cycle and its stabilization. It was until the 1930s that the authors such as J. Schumpeter (1934) inspired E. Domar (1946) to develop the formal growth theory from the Keynesian analysis by studying savings and capital accumulation.

In this context, the papers by R. Solow (1956) and T. Swan (1956) appeared, the models predicting the economies converging to the steady state where capital accumulation is stopped. Convergence prediction originates from the only engine to grow from exogenous technological progress in these return diminishing models. Empirical evidence plays against this idea of sigma convergence (the speed at which a country approaches its steady state), so the neoclassical hypothesis is nuanced by being replaced with beta convergence (a logarithm-based dispersion in *per capita* income between countries), which

conditions it to the economies of similar demographic parameters, institutional or natural resources, among other things (Sala-I-Martin, 2006).

In line with this literature, the fact that sustainable growth requires the development, accumulation, and distribution of not only efficient, but equitable as well, quality physical, human and social capital and taking care of its natural resources through savings and its correct channeling to investment is being emphasized now. This expanded vision of capital arises from the context of global inequality and unprecedented environmental deterioration, which shows that economic growth is only the first step towards achieving greater wellbeing. Thus, the growth and development the study frameworks gradually merge into one (Pavón, 2019).

The study of the link between savings, loans, investment and economic growth goes back to W. Bagehot (1873), J. Schumpeter (1934) and, years later, to the authors such as R. McKinnon (1973). However, endogenous growth theories are those that allow a more rigorous analysis of the importance of financial development (Levine, 1991), which, as allowed by econometrics, progressively discovers its endogenous and asymmetric nature. Years later, the Great Recession (2007) questions the benefits attributed to financial deepening into the economy, raising the possibility that its relationship with growth may be positive, but yet with a turning point, beyond which financial excess subtracts resources from other sectors, even inducing over-indebtedness and recurring financial crises (Minsky, 1982).

The financial development no longer based upon its size should then be assessed against the Gross Domestic Product (GDP), but the same should be performed based upon its coverage for the population, i.e. financial inclusion.

Even though there are several definitions of financial inclusion, there is a consensus that it refers to the process of promoting affordable, timely and adequate access to financial products and services and broadening their use by all society segments through the implementation of the tailored existing and innovative approaches, including the financial education and technological readiness focused on promoting financial wellbeing, systemic stability and economic and social inclusion as well, thus contributing to sustainable economic development (Sarma, 2008; OECD, 2018; Pavón, 2019).

Broadly speaking, financial inclusion implies access to transaction accounts and savings, pension funds, mobile money, insurance, and loans as well. Nevertheless, savings accounts numbers and commercial bank borrowers are only available in databases, both being available for each number of inhabitants. Likewise, the use of these variables is justified not only by the importance of commercial banking in the provision of the basic financial services, but also due to those being a prerequisite to access to more sophisticated products (Sarma, 2008).

Apart from the fact that access to finance allows the channeling of savings towards investment, it also provides support to governments in meeting their development goals by managing liquidity constraints imposed on economic operators, promoting collection efficiency and reducing crime and informality (Pavón, 2019). Furthermore in the productive field, it relieves the market frictions that make external funds difficult to obtain and facilitates corporate entrepreneurship and development, their invaluable sources of innovation, thus indirectly contributing to greater dynamism (Banerjee & Newman, 1993). For financial service providers, greater access to finance supports diversification, improves their expected benefits, and expands their potential customers, allowing them to counteract the lowest benefits recorded in the corporate and governmental spheres (Chauvet and Jacolin, 2017).

Given the foregoing, financial inclusion is the source of growth and social inclusion intended to achieve "a decent life for all" as conceived by the United Nations in their Millennium Declaration (2000) and as attested by the 2030 Agenda for Sustainable Development (UN, 2016).

RESEARCH METHODOLOGY

The theoretical model

The theoretical framework for economic growth and financial inclusion having been studied, the models that allow the testing of the relationship between them are built in this section. For this purpose, the neoclassical production function and the R. Solow (1956) and T. Swan (1956) model are taken as the starting point, the contributions of R. J. Barro and X. Sala-I-Martin (1995) subsequently being included, simultaneously incorporating the variables to the model that reflect human capital according to R. E. Lucas Jr (1988) approaches, and capital or natural resources (Sala-I-Martin, 2006). Finally, the financial development variables are integrated following the study of N. G. Mankiw, D. Romer and D. Weil (1992), due to their importance as a means to transfer savings to productive investment or, in other words, capital formation. Including such variables also allows the assessment of whether the financial system influences countries' productive activity as its dimension increases or not, or whether it does so more effectively through greater inclusion or not.

This research study is based on the neoclassical production function, where the economy's product increases as its productive inputs, in its simplest version labor (*L*) and capital (*K*), do in each given period, namely as follows:

$$Yt = F(Kt, Lt) \tag{1}$$

The production factors are partially replaceable, which means that, in addition to its being continuous and sufficiently differentiated, the function *F* meets Inada's conditions, namely:

$$\frac{dYt}{dKt} > 0 \quad \frac{dYt}{dLt} > 0 \quad \frac{d^2Yt}{d^2Kt} < 0 \quad \frac{d^2Yt}{d^2Lt} < 0 \tag{2}$$

$$\lim_{Lt \to 0} \frac{dYt}{dLt} \to \infty \quad \lim_{Kt \to 0} \frac{dYt}{dKt} \to \infty$$

$$\lim_{Lt \to \infty} \frac{dYt}{dLt} \to 0 \quad \lim_{Kt \to \infty} \frac{dYt}{dKt} \to 0 \tag{3}$$

where

$\frac{dF}{dX}$ is the first partial derivative of F(x) to x and

$\frac{d^2F}{d^2X}$ is the second partial derivative of F(x) to x.

Therefore, the marginal product of the rival production factors is positive, though declining.

Additionally, as is often assumed in this type of analysis for simplification purposes, this aggregated production function has constant returns to scale, so the following condition is met:

$$\lambda Yt = \lambda F(Kt, Lt) = F(\lambda Kt, \lambda Lt) \tag{4}$$

$$\forall \lambda > 0$$

According to this property, production simultaneously increases in the same proportion as the inputs involved in it.

To arrive at a dynamic growth model like the R. Solow (1956) and T. Swan (1956), in addition to the starting hypotheses on which the static function of neoclassical production is based, certain additional assumptions are also required.

On the demand side of a simple economy without the government or external sectors, production (*Yt*) is either consumed (*Ct*) or invested (*It*). On the income side, the private sector is made up of families and businesses, either consumed or saved (*St*). Combining both identities, it follows:

$$Yt = Ct + It = Ct + St \tag{5}$$

Subtracting consumption on both sides:

$$It = St \tag{6}$$

$$Ct = cYt \tag{7}$$

$$St = sYt \tag{8}$$

$$Ct = (1-s)Yt \tag{9}$$

$$0 < c < 1 \qquad 0 < s < 1$$

where *c* is a marginal propensity to consume and *s* to save. Both remain constant in the model and the assumption is empirically validated at least in the short run. The δ capital depreciation rate is also assumed to be constant, so the investment made by companies can be used to increase the capital stock or replenish its depreciation:

$$It = \left(\frac{dKt}{Kt}\right) + \delta Kt \tag{10}$$

Applying all the previously defined constraints in the production function and matching it to demand:

$$Y(t) = F(Kt, Lt) = Ct + It \tag{11}$$

Replacing *Ct* and *It* with their respective value:

$$Y(t) = (1-s)Yt + \left(\frac{\delta Kt}{Kt}\right) + \delta Kt \tag{12}$$

Then, net investment is represented by:

$$\left(\frac{dKt}{Kt}\right) = sYt - \delta Kt \tag{13}$$

where, together with the capital stock at the time *t*, it constitutes the capital acquired in the *t+1* period, assuming *s* and δ to be the constants. In this model, investment is:

$$S_{Kt} = \left(\frac{\delta Kt}{Kv}\right) + \delta Kt = s_K Yt \tag{14}$$

$$0 < s_K < 1$$

Besides, the population increases over time at a constant rate *n*, an assumption for simplification purposes, since in reality, population growth tends to slow down as countries advance in development; so, it would be an endogenous variable to the model, but in a scenario lasting for a longer term than that used in this study, as suggested by R. J. Barro and X. Sala-I-Martin (1995):

$$\frac{dNt}{dt}\frac{1}{Nt} = n \tag{15}$$

This model is typically represented by the Cobb-Douglas production function with constant returns to scale:

$$Yt = AtKt^{\infty} Lt^{1-\alpha} \tag{16}$$

$$\alpha < 1$$

where *Yt*, *Kt* and *Lt* represent the product, physical capital, and labor, respectively, and *At* is the level of economic and technological efficiency, the function of the institutional framework, innovation processes, and technological progress. In short- and medium-term scenarios, the growth rate of this productivity factor is often regarded as an exogenous variable, but the model estimated in this paper is more restrictive, assuming the constant *A* to demonstrate that net capital investment in a broad sense and financial inclusion each provide economies with a growth path (Durán, 2018). This assumption is reasonable as it has been proven that the institutional framework and technological development change at a relatively slow pace (North, 1990, 71-72):

$$At = A \tag{17}$$

However, *A* continues to influence the model production function, but not its growth. In order to estimate the economic growth model potentially comparable between countries, it is necessary to express its variables in *per capita* terms and simplify modeling, *L* is assumed to be equal to the total population *N*, meaning that the entire population is taken into consideration and that the whole population contributes to an increase in production.

$$yt = \frac{Yt}{Lt}; kt = \frac{Kt}{Lt} \tag{18}$$

where *yt* is the product *per capita* and *kt* is the working capital ratio given *A*. Leveraging the existence of constant returns to in the production function, the following is obtained:

$$yt = \frac{Yt}{Lt} = F(\frac{Kt}{Lt}, \frac{Lt}{Lt})$$

$$yt = F(kt, 1) \tag{19}$$

The next step is the capital concept expansion by adding the variables suggested by R. Solow (1956) and T. Swan (1956) and following R. Levine (1991) in addition to physical capital (*Kt*), as human capital (*Ht*) natural capital (*RNt*) and financial development (*Ft*) following T. Beck, A. Demirgüç-Kunt and R. Levine (2007):

$$yt = A\Omega t^{\infty} Lt^{1-\alpha} \tag{20}$$

$$\Omega t = Kt + Ht + RNt + Ft \tag{21}$$

In this model, investment in different productive inputs is represented as follows:

$$S_{Kt} = s_K Yt; S_{Ht} = s_H Yt; S_{RNt} = s_{RN} Yt$$

$$S_{Ht} = s_H Yt; S_{Ft} = s_F Yt \tag{22}$$

$$0 < s_K; s_H; S_{RN}; S_F < 1$$

S_{Kt}; S_{Ht}; S_{RNt}; S_{Ht} and S_{Ft} symbolize investment in physical capital, human capital, the preservation of natural resources, and financial development, respectively, so savings should be distributed among these rival investments:

$$S_t = S_{Ft} + S_{Kt} + S_{Ht} + S_{RNt} + S_{Ft} \tag{23}$$

$$S_t = s_{Yt} \quad 0 < 1 < s$$

taking the Cobb-Douglas function, keeping the assumptions and given *A*:

$$yt = \frac{Yt}{Lt} = \omega t^{\alpha} \tag{24}$$

$$\frac{dyt}{d\omega t^{\alpha}} = \infty \omega t^{\alpha - 1} \tag{25}$$

where, given the *A* factor productivity level, *ωt* it is expanded capital *per capita*, which includes all forms of capital:

$$\omega t = kt + ht + rnt + ft \tag{26}$$

All forms of capital are similarly accumulated in this simplified model. Net investment in human capital *per capita* can be expressed as investment per person minus that necessary to maintain the acquisition of human capital and counteract its depreciation rate represented by the loss of knowledge arising from oblivion and obsolescence derived from advances in science. In turn, net investment in natural resources *per capita* results from additional investment in the preservation of natural resources *per capita*, as these are deteriorated by their exploitation and population growth. Finally, investment in financial coverage *per capita* is the additional investment necessary to maintain financial deepening or financial inclusion and counteract its depreciation rate represented by technological obsolescence and wear of its access channels.

This reaches the production function that positively depends on physical capital, human capital and natural capital. Also, the higher the level of financial deepening or inclusion (the one with higher significance given the economic efficiency), the greater the growth of the economy. Applying logarithmic differences in the production function, economic growth can be expressed as the different input function, where coefficients represent elasticities:

$$\frac{dY}{dt} \cdot \frac{1}{Yt} \tag{27}$$

By development, the temporal trajectories of these variables *per capita* can be described by the following equation when A is fixed as in this model:

$$ln\ ln\ yt = \alpha\ ln\ \omega t \tag{28}$$

However, since an economy's different types of capital actually grow at different rates and given the fact that their depreciation also differs from one another ($\delta_{\omega t} = \delta_K + \delta_H + \delta_{RN} + \delta_F$; $\delta_K \neq \delta_H \neq \delta_{RN} \delta_F$) it is desirable that

the logarithm of broad capital *per capita* should be broken down into its various components given A, so that each of them has a different coefficient. Although and while being simplistic, this decomposition is useful when this paper is concerned if interest is considered to rely on the sign and significance of the different inputs of this extended production function, not on the interpretation of its coefficients, which would be more complex.

$$ln\, yt = \xi\, ln\, kt + \varphi\, ln\, ht + \rho\, ln\, rnt + \mu\, ln\, ft = \alpha\, ln\, \omega t \quad (29)$$

The estimated model

In order to make an estimation of the theoretical model, the panel data methodology is used. In the first phase, the Breusch and Pagan test is performed so as to evaluate whether the panel data are preferred to the pool data or not. Once individual effects have been checked, their treatment is defined as either fixed or random and the heteroscedasticity and autocorrelation detected by the Wald and Wooldridge tests are respectively corrected using an estimated static panel with the Standard Errors Corrected for Panel methodology (*xtpcse*):

$$l\widetilde{ny}\imath t = \xi ln\widetilde{\tilde{k}}\imath t + \varphi ln\widetilde{h}\imath t + \rho lnr\widetilde{n}\imath t + \mu ln\tilde{f}it + \mu_{it} \quad (30)$$

where the variables expressed in the logarithm and in real and *per capita* terms represent the product of the *i* country in the time *t*($\widetilde{y}\imath t$); the formation of the physical capital of the i country in the time *t*($\tilde{h}it$); the human capital of the *i* country in the time *t*($\tilde{h}it$); the natural resources of the i country in the time *t*($\text{the}\widetilde{rn}_{it}$) the financial development of the *i* country in the time *t*($\tilde{f}it$) and the disturbance term (μ_{it}). While this model already includes a dynamic component represented by savings and investment, it is necessary to move towards a more complex methodology in order to model the intertemporal dependence on economic growth.

For the dynamic estimation, the Generalized Method of Moments (GMM) is used, namely the *xtabond2* D. Roodman model (2006). To rule out the over- identification of the model, the Hansen test is performed, since the weight heteroscedastic matrix has been used in the estimation of the model, valid for the estimators with a robust variance and in two stages, the more efficient estimate that avoids its bias. It is also verified that the errors are not serially correlated using the *Arellano and Bond test*.

To prevent a possible over-identification of the model that might arise from the limited number of the countries included in the sample once different databases have been integrated, a mechanism suggested in the specialized literature is used, which consists of restricting the number of the lags of the dependent variable to be used as the instruments to 2 (Stata, 2019). The finally estimated equation is as follows:

$$\begin{aligned} l\widetilde{ny}\imath t &= \eta ln\, \widetilde{y}_{i,t-1} + \xi ln\widetilde{\tilde{k}}_{it} + \varphi ln\widetilde{h}it + \\ &\quad \rho lnr\widetilde{n}\imath t + \mu ln\, fit + \varepsilon_{it} \\ \varepsilon_{it} &= \mu_i + \upsilon_{it} \quad \mu_i = \upsilon_{it} = E(\mu i \vartheta it) = 0 \end{aligned} \quad (31)$$

where variables are in the logarithms and expressed in real and in *per capita* terms. The disturbance term (εit) includes two orthogonal components: fixed effects (μit) and idiosyncratic disturbances (υ_{it}). In the simplest possible way, this captures double causality between growth and its determinants, according to the endogenous growth literature. The results are presented in the next section.

EMPIRICAL DATA, ANALYSIS, AND DISCUSSION OF RESULTS

In this section, the recent trends in the world economy and financial inclusion are described and their interactions are then analyzed estimating the models and confirming whether they maintain a significant statistical relationship for the sample and the study period controlling for other factors.

Empirical evidence: Economic growth and financial inclusion

Over the past decade, industrialized countries have suffered from the consequences of the financial

crisis, and the disappointing recovery gives rise to the concerns that B. Eichengreen (2015) calls secular stagnation, the idea that poor demand and productivity stagnation condemn advanced countries to chronically slow growth. Even when the global economy grew 3.4%, this figure was due to dynamism perceived in emerging countries, such as China and Asian tigers, and slow growth in other Latin American countries and the Caribbean: the average 0.3% per annum between 2014 and 2019 (ECLAC, 2020). The COVID-19 pandemic has highlighted the global inability to take the position of solidarity, and the growing inequality inside and between countries that has accompanied it, which has given rise to social instability, migratory flows, populist responses, and protectionist and xenophobic reactions as well.

This global turbulence also reflects popular discontent with the prevailing economic order caused by the labor frictions derived from technological change and the prominence of new players, aggravated by the inability of governments to alleviate them. Since the Great Recession of 2017, for example, the benefits attributed to the gradual "financialization" of the economy have been questioned and greater inclusion has been proposed instead. According to the figures from the Global Findex survey (Demirguc-Kunt, Klapper, Singer, Ansar & Hess, 2018), bank accounts are currently the main access to the more sophisticated financial services that allow more comprehensive financial inclusion. In general, this has improved in recent years although the performance of its various indicators differs. While the number of ATMs, current accounts, and loans is growing, commercial bank branches are continuing at the levels like those of 2013 in emerging countries and have even fallen in the United States and Europe. This trend reflects the cost-cutting measures of banks, as well as the gradual deepening of digital financial services. In Mongolia, for example, the volume of operations through mobile banking and the Internet quadrupled between 2015 and 2018 (IMF, 2020).

According to the World Bank (2020), more than 70% of adults worldwide have a financial account. However, coverage broadly varies from one place to another, while in Europe and Central Asia, everyone has an account and 35% of adults have a bank loan; in Sub-Saharan Africa, these figures do not reach 25% and 5%, respectively. Advances in financial inclusion are also heterogeneous: between 2014 and 2017, a total of 515 million adults opened an account; whereas the countries such as Georgia or Namibia recorded significant progress, on the one hand, Burma or Pakistan did not make any, on the other.

The progress made in gender equality and loans to small & medium-sized enterprises (SMEs) is disappointing. There has been no change in the gender gap since 2011: 72% of men own a bank account in comparison with only 65% of women, this gap increasing by two percentage points for developing countries (Demirgüc-Kunt *et al*, 2018). In a similar fashion, the International Monetary Fund's Business Surveys show that bank funding to SMEs has been stagnating at 6% of the GDP since 2015 (IMF, 2020).

Selecting the sample and the model variables

In this section, the two selected empirical models estimated for the period from 2009 to 2019 with a sample of 40 countries (Albania, Argentina, Saudi Arabia, Bangladesh, Belize, Brazil, Colombia, Costa Rica, Croatia, Ecuador, Egypt, El Salvador, Estonia, The Philippines, Ghana, Hungary, Israel, Italy, Latvia, Malaysia, Mali, Moldova, Namibia, Pakistan, Paraguay, Peru, Poland, Dominican Republic, the Republic of North Macedonia, Rwanda, Senegal, Tanzania, Thailand, Togo, Tunisia, Turkey, Uganda, Ukraine, the United Arab Emirates, and Uruguay) are presented. The sources of information are the World Bank (2020) and the IMF (2020). The integration of the series from different sources forces us to dismiss series, years and countries, and estimate some data using linear extrapolation (Armstrong & Collopy, 1993). Below is a brief synthesis of this variable selection process.

The first step was to define the dependent variable based on the specialized literature: the real GDP in *per capita* terms adjusted by the purchasing power parity and chosen due to its expanded use as an indicator in economic growth research.

In regard to the explanatory indicators, the control variables used were the workforce with at least high-school education as a percentage of the total labor force and as the human capital proxy and consistently the most significant among many others in all the estimates; the real stock of physical capital and, as the natural capital proxy, the real *per capita* income obtained from its exploitation whose sustainability is implicit in its annual growth stability and, therefore, in the sign and significance of its coefficient. First, an attempt was made to include the representative variables of social capital, the formal (institutions) and the informal (cultural traits) ones. In addition to the problems derived from the availability of information, however, its scarce significance seems to confirm, as pointed out by D. North (1990, 71-72), that the social capital represented by the restrictions designed by the human beings that shape the interaction and reflect the culture of a society are transmitted to individuals throughout their lives and change at a relatively slow rate, which makes them explanatory but to a very small extent in the growth models with a relatively short period of analysis, such as that of this research. Another possible explanation for the low significance of this category of the variables reflects in its high correlation with the other ones in the model, as suggested by A. Bassanini and S. Scarpetta (2001).

Finally, the variable of interest is included in the model, that variable being the financial development indicator. After multiple estimates, coverage was the indicator significantly above financial penetration: depositors with commercial banks per 1,000 adults, which refers to the number of the deposit account holders with commercial banks and with the other resident banks operating as the commercial banks nonfinancial resident corporations (public and private) and households. For many countries, the data cover the total number of the deposit accounts due to a lack of information on the account holders. The major deposit types are checking accounts, savings accounts, and time deposits. This is the most broadly used indicator of the basic financial inclusion (Sarma, 2008).

In this regard, it should be noted that, even though the other available indicator of financial coverage per inhabitant - borrowers from the commercial banks as per 1,000 adults - might more accurately have reflected the use of financial products, it revealed inconsistent results among the countries, possibly because it might also reflect the liquidity or solvency problems faced by both individuals and companies, as indicated by B. S. Bernanke and M. Gertler (1989), for which reason the same had to be discarded.

The results of the empirical analysis and discussion

For a static analysis, an *xtpcse* panel was estimated with the Prais-Winsten equation (Stata, 2019) upon detecting the first-order autocorrelation and heteroscedasticity.

The estimate is presented in Table 1. The model passes the tests for the nonexistence of the omitted or redundant variables and not the over-identification tests. In the static model, the high explanatory power of financial inclusion confirms those insights found by the authors such as S. P. Sinclair (2001), among others. As expected, the significance of the education variable confirms the importance of human capital, indicated by the authors such as C. Mulligan and X. Sala-I-Martin (2000). Also, the explanatory power of physical capital is consistent with the previous studies (Bassanini & Scarpetta, 2001). Finally, the model shows that the existence of natural resources, even more so their sustainable exploitation, has a positive and significant effect on economic dynamism, which is also consistent with the studies by P. M. Romer (1990), among others.

The dynamic estimation by xtabond2 is carried out by conducting a robust analysis and in two steps, the results ultimately being similar to those obtained in the static panel. Once the absence of the over-identification of the model has been analyzed, the results are validated, which allows the confirmation of its robustness and more clearly expresses the endogenous character of economic growth.

As shown in Table 2, the explanatory power of the model and its components is high, except in the case of the constant that is included in the Table as the results are not altered.

Table 1 Static PCSE panel results

Variables (expressed in real terms and *per capita*)			
Dependent:			
$\widetilde{lnyit}$	(domestic product)		
Explanatory		Coefficient	SE (hetero corrected)
C	(constant)	2.31230 **	0.03447
$\widetilde{ln\tilde{k}_{it}}$	(physical capital)	0.00297 ***	0.00220
$ln\ \tilde{h}it$	(human capital)	0.00325 ***	0.00624
$\widetilde{lnrn}_{it}$	(natural capital)	0.49082 ***	0.00262
$\widetilde{lnf}it$	(financial inclusion)	0.01416 ***	0.00575
R^2		0.9998	
Wald			
Chi^2		87 397.09	
Prob > Chi^2		0.0000	
Haussman			
Chi^2		772.25	
Prob > Chi^2		0.0000	
Observations		440	
Countries (panels)		40	

Regression Prais-Wisten xtpcse het c (ar1). * Significant at 10%; ** 5% and *** 1%.

Source: Author

In other words, greater financial inclusion promotes economic growth by allowing economic agents, particularly lower-income families and smaller companies, to alleviate their liquidity constraints and thrive. This increased economic activity in turn leads to greater financial inclusion, a product of a larger number of access channels, more comprehensive financial education and literacy, and the income levels that promote greater banking, among other factors. In a similar fashion, a greater accumulation of physical capital and human capital and the existence and sustainable exploitation of natural resources induce a greater economic activity, which in return allows greater investment in these productive factors. The results coincide with those obtained by P. M. Romer (1990), among others.

CONCLUSION

For more than one whole decade, the performance of the world economy has manifested deep disparities between countries and the stagnation of the industrialized world. The trends such as environmental damage, technological friction, and the prominence of new players in the global sphere have been exacerbated by governments' inability to deal with it and prepare their citizens to confront them. The Great Recession that put an end to the economic dynamism supported by a financial and real estate expansion, and the policies having been implemented since then, have entailed high social costs, such as the partial dismantling of social safety nets and greater job insecurity. The growing inequality within and between nations has been the fuel of global discontent, migration, populist governments, and protectionism.

The world requires high capital levels, which must equally be constituted because productivity gains will maintain the necessary momentum and social peace to create the virtuous circle that directs the global economy to sustainable growth and inclusive development to the extent that will enable a larger number of people to benefit from them. The recent literature has emphasized the productive nature of this new vision of progress: taking care of the environment and equity is not only the expected result of growth, but also an indispensable input for its sustainability.

Table 2 Dynamic panel results

Variables (expressed in real terms and *per capita*)				Coefficient	WC- Robust standard error
Dependent:					
$\widetilde{lnyit}$	(domestic product)				
Explanatory					
C	(constant)			3.33724	0.43836
$\widetilde{lnyit}$-1	(national product of the previous year)			0.14064*	0.08307
$\widetilde{ln\tilde{k}_{it}}$	(physical capital)			0.03537**	0.01266
$ln\ \tilde{h}it$	(human capital)			0.00174***	0.00151
$\widetilde{lnrn}_{it}$	(natural capital)			0.30831**	0.02818
$\widetilde{lnf}it$	(financial inclusion)			0.01361***	0.00868
Test de Wald Chi²	*Who²*	2 253. 88	*Prob > Chi²*		0.00000
Arellano Bond in	*Ar (1)*		z= 1.8409	*Prob>z*	0.0656
first differences	*Ar (2)*		z= 0.3214	*Prob>z*	0.7479
Observations/Groups			320/40		
Instruments			20		

Dynamic Panel Arellano Bond GMM - Two-Step-Robust Standard. *Significant at 10%; ** 5% and *** 1%

Source: Author

After the validation of the originally proposed hypothesis, the research study results provide the statistical evidence that economic growth positively and significantly depends on the accumulation of capital (physical, human, and natural), supported by the mobilization of the resources for productive investment through savings represented by financial inclusion. Social capital is the core part of this process although this has not explicitly been demonstrated in this study due to the scarce availability of the indicators and their low variability in the time horizon considered, but above all because it constitutes a prerequisite for promoting the infrastructure development, social inclusion (human capital and financial inclusion), as well as the sustainable exploitation of natural resources: all these factors are already included in the models estimated in the present study.

This paper, however, goes even further: by following the trajectory of the theoretical framework of economic growth, it starts from the estimation of the static panel based on R. Solow (1956) and T. Swan (1956) and ends with the dynamic panel that incorporates the principles of the endogenous growth models. The estimation of both is consistent, which makes it possible to verify the robustness of the selected variables, which retains their individual and joint significances. Then, the most significant contribution made by this research study reflects in the provision of the quantitative evidence of the endogenous nature of economic growth and the importance of inclusive financial intermediation. By allowing economic agents to find solutions to liquidity restrictions and channel savings to productive investment, financial inclusion and social inclusion more broadly speaking result not only in the desired achievement of economic growth, but in the input required for its future sustainability, too. Hence, this paper confirms its leading role in the achievement of the Millennium Goals by being part of the Sustainable Development Goals (SDGs).

In contrast to traditional financial deepening (loans and/or deposits on Gross Domestic Product) and their eventual diminishing returns, financial inclusion can be a more feasible engine for economic growth

helping individuals to reduce their transaction costs and increase safety over cash or informal providers, promoting entrepreneurship, the business activity and social mobility through greater access to education, risk coverage and financial losses withstanding. As the OECD (2018, 9) points out, these benefits lead to the improvements of human and social development, economic growth, job creation as well as reductions in poverty and income inequality rates at the country level, whereas a diversified deposit base induces increased stability and creates a resilient financial system.

The methodology applied in this research study, as well as the integration of various databases, can be extrapolated to other study frameworks both geographically and temporarily. The reliability of the figures, as well as the diversity of the countries included in the analysis, provide relevant information in the theoretical and empirical fields. Its main value is to incorporate the unconventional indicators from different knowledge areas that interact so as to better understand the sources of growth and wellbeing.

This paper is limited with respect to the used definition of narrow or human capital that does not cover the different ways in which the same is formed in the formal and informal fields, nor does it include the quality of the years of study or the differences existing within the same country. Besides, the sources of information restrict the subject matter of the study to the countries for which data are moderately available, which could lead to a sample bias, although the excluded countries together correspond to both the industrialized and the emerging worlds.

The weaknesses attributed to the panel data analyses are an additional limitation to the paper, whereas the identification of the determinants and the general trends presupposes that the economies share the same function and its relative stability over time.

In the end, the financial inclusion indicator used in the paper (namely the depositors with the commercial banks as per 1,000 adults) is the indisputable limitation of this paper given the fact that it is focused on measuring access more than the depth of use of these services. This research study had to settle for this proxy due to a lack of the more precise financial inclusion indicators of the international scope, given the fact that the alternative available indicator connected with access to loans could not be used as it translated not only the inclusion of individuals and firms, but also their financial problems.

This paper, however, is the starting point towards a deeper understanding of the financial inclusion process and the different channels through which it internationally contributes to economic dynamism. Although some of this information is already available for some countries to use, it will be necessary to wait for a few years to generate the time-series cross-sectional data that enable its statistical treatment.

Hence the following research questions are considered as relevant for future studies How are the different stages of financial products used by individuals and companies accurately measured? Which of these financial products and services more effectively contribute to economic growth and through which channels do they make such contribution?

It is crucial for designing a public policy that such a policy should more precisely identify the different indicators that define financial inclusion and represent the different levels of the intensity of the use of the instruments of this kind. A more detailed study should also be carried out, separating individuals from companies, people by their respective gender and age, or firms by their respective size and sector, the information that exists, but in an incipient manner, requiring a few years to obtain the cross-sectional and time-series data that enable their statistical treatment.

Even though few reliable indicators have been established to assess its impact so far, the digital age has had the COVID-19 pandemic constituted as an inducer of low-cost financial inclusion and an opportunity for more inclusive future growth as an unprecedented accelerator. On the supply side, the provision of financial services has been expanding driven by the product development that intensifies competition, reduces transaction costs and promotes regulatory arbitrage. On the demand side, recent trends in labor markets have been drivers of entrepreneurship and the home office, and have been

creating new preferences for access to and the use of financial services.

Governments can promote financial packages on the digital platforms that provide users with the same, starting with opening an account, allowing access to more sophisticated low-cost products, such as loans, loan information societies, factoring and financial leasing, among other things. They may also include interactive diagnostic tools, as well as financial education courses. These programs can be realized through the entities that operate as intermediaries, such as business development centers, development banks or local agencies, no matter whether they are public or private.

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