Financial Inclusion and Economic Growth: Exploring a New Pattern of Functional Relationships

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Abstract

This paper endeavours to investigate the nexus between financial inclusion and economic growth, elucidating the positive effects stemming from the broadening utilization of financial services within society using panel data encompassing ten countries —Argentina, Armenia, Chile, Costa Rica, Georgia, India, Moldova, Montenegro, Poland, and Saudi Arabia— over the periods of 2010-2019.

The findings reveal that there exist initial positive effects on GDP concomitant with the expansion of financial services usage, followed by subsequent positive effects that may manifest irrespective of further expansion. From an econometric standpoint, this implies a positive response of the GDP indicator to the augmentation of financial services expansion indicators and conversely, a negative response to their decline. Thus, it concludes mixed relationships, characterized by the amalgamation of two distinct responses of the dependent variable concerning its association with the independent variable.

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1. Introduction

Financial inclusion initiatives play a critical role in many aspects of sustainable development, particularly in promoting economic growth (Klapper et al., 2016). Most empirical studies conducted on different samples of countries have demonstrated the positive effects of financial inclusion indicators on economic growth (Varshney and Singh, 2020; Ozili, Ademiju and Rachid, 2022). However, only a limited number of studies have provided sufficient explanations to justify these positive effects. Consequently, the initial aim of this study was to deepen the understanding of how financial inclusion initiatives contribute to economic growth. This pursuit led to the discovery of a novel pattern of functional relationships that was deemed worthy of being documented.

Financial inclusion initiatives expand the use of financial services in society. These services can drive the economy in various ways to consume and produce more goods and services, which is the basis for economic growth or growth of the gross domestic product (GDP). The services, such as deposit, insurance, and borrowing services, do so in several ways, including what occurs with the expansion in the use of these services and is reflected in the GDP as immediate positive effects, and what occurs in subsequent periods and is reflected in the GDP as subsequent positive effects. In essence, this means that the expansion in the use of these financial services in a given period may be associated with positive effects on the GDP (immediate positive effects), and later, even if there is no further expansion or only a small expansion in use, there may still be further positive effects on the GDP in subsequent periods (subsequent positive effects).

If the expansion in financial services usage is represented by appropriate quantitative indicators, then the above proposition necessitates econometrically that the increase in the financial services expansion indicators, specifically deposit, insurance, and borrowing services, results in an increase in the GDP indicator due to the immediate positive effects of these services. Conversely, a decrease in the same indicators leads to a minor decrease or potentially even an increase in the GDP, thanks to the subsequent positive effects. Therefore, the response of the GDP indicator to the increase in the financial services expansion indicators is estimated to be a positive response, while its response to the decrease in the same indicators is estimated to be a lower positive response or it could even be a negative response. This situation significantly differs from the conventional perception of relationships in econometrics, particularly linear relationships, which assume that the response of the dependent variable to the increase and decrease in the independent variable is similar in both directions. In such cases, when the independent variable increases, it is estimated that the

dependent variable will increase by a certain amount (a positive response). Conversely, when it decreases, the dependent variable will decrease by the same amount (a similar positive response), or vice versa if the relationship is negative.

To examine the aforementioned propositions, the current study employs a special econometric modeling to determine the response of the GDP indicator at the periods or time points when the financial services expansion indicators increased, on the one hand, and at the time points when these indicators decreased, on the other hand. The objective of this modeling is to conduct a regression analysis based exclusively on data from predetermined time points. This is done first by extracting the movements of the expansion indicators and the corresponding responses of the GDP indicator by taking the first differences for all these indicators. Subsequently, dummy variables are created to distinguish between time points where the expansion indicators increased and those where they decreased. Finally, by linking the data on the movements of the expansion indicators to the dummy variables, a regression can then be performed to estimate the GDP response at those time points determined by the dummy variables.

The study's methodology is applied to panel data related to 10 countries that experienced significant changes in financial inclusion levels between 2010 and 2019. Based on sources such as OECD[1] and AFI[2] most of the selected countries, including India, Argentina, Armenia, Costa Rica, Saudi Arabia, Chile, and Poland, have officially initiated, either directly or indirectly, to enhance local financial inclusion levels. Thus, if financial inclusion initiatives do indeed have a positive impact on economic growth, it will be evident in the case of these countries. In another respect, the study's time frame seems relatively short, but most importantly, this interval did not witness any international disturbances with a wide impact that would negatively affect the final estimates.

The estimates confirm the expected responses of the GDP indicator to the increase and decrease in the financial services expansion indicators. The study has thereby provided a new perspective on the relationship between independent and dependent variables, where the response of the dependent variable to an

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[1] OECD. (2015). National Strategies for Financial Education: OECD/INFE Policy Handbook. Organisation for Economic Co-operation and Development. https://www.oecd.org/daf/fin/financial-education/national-strategies-for-financial-education-policy-handbook.htm

[2] AFI. (2022). National Financial Inclusion Strategies: Current State of Practice. Alliance for Financial Inclusion. https://www.afi-global.org/publications/national-financial-inclusion-strategies-current-state-of-practice-2022

increase in the independent variable is different from its response to a decrease in the variable itself. This discrepancy arises due to the immediate and subsequent positive effects stemming from the expanded use of financial services. In the following, the path that led to this result will be explored in more detail.

2. Literature Review

Looking back at previous studies on how financial inclusion initiatives can support economic growth, most of the explanations provided by researchers have tended toward two contexts. The first context highlights financial inclusion as a means to alleviate poverty (Imboden, 2005; Chibba, 2008; Conroy, 2008). The idea here is to help the poor access affordable financing to start their own businesses that will generate additional income, improve their living conditions, add value to national production, and create more jobs (Anand & Chhikara, 2013; Demirgüç-Kunt & Singer, 2017; Ozili, 2018; Sethi & Acharya, 2018). Stimulating consumption among individuals and supporting various enterprises are, in this respect, two important channels through which financial inclusion initiatives can promote economic growth (Liu et al., 2021). Additionally, many studies support this context with empirical evidence showing the positive effect of financial inclusion on poverty reduction in different samples of middle- and low-income countries (Park & Mercado Jr 2018; Kelikume 2021; Polloni-Silva et al. 2021; Shi & Qamruzzaman 2022; Tsouli 2022; Saha & Qin 2023).

In another context, researchers have emphasized the role of financial inclusion in achieving financial development (Agarwal, 2007; T. Beck et al., 2009), whereby all segments of society are enabled to obtain financial services at an affordable cost, improve the distribution of financial resources among economic units, provide the liquidity to finance the most productive investments and innovations, and increase market efficiency in a way that ultimately leads to the promotion of economic growth (Babajide et al., 2015; Sharma, 2016; Sulong & Bakar, 2018; Abor et al., 2020). Researchers refer in this regard to the works of famous economists like Joseph Schumpeter and Robert Solow, as well as empirical studies demonstrating the positive effect of financial development on economic growth. Worth mentioning that financial inclusion initiatives can lead to the achievement of financial development (Rasheed et al., 2016; Lenka, 2022), because the implementation of such initiatives requires the responsible authorities to adopt improved procedures to encourage the use of financial services, including the establishment of favorable legal and regulatory frameworks, enhancing financial education, facilitating financial access, and crucially, adopting technological solutions to maximize the positive effects of

financial inclusion on economic growth (Mushtaq & Bruneau, 2019; Daud & Ahmad, 2023).

In a different context, regardless of whether financial inclusion initiatives promote economic growth through financial development or poverty alleviation, their positive impact relies on stimulating the economy to produce and consume more goods and services, on the basis that economic growth is achieved when there is a significant increase in the total output of the economy. Therefore, financial inclusion initiatives can only contribute positively to economic growth by stimulating production and consumption levels. Accordingly, financial development and the reduction in poverty rates associated with financial inclusion initiatives are seen in this context as positive outcomes rather than direct channels through which economic growth is promoted. This study aims to provide a comprehensive analysis of how financial inclusion initiatives can stimulate economic growth by considering their potential to increase production and consumption. Understanding this will also help in identifying relevant theoretical arguments to support the analysis, especially since previous studies in this area have not used any theories to explain the impact of financial inclusion on economic growth (Ozili, Ademiju and Rachid, 2022).

2.1. How can financial inclusion initiatives promote economic growth?

Financial inclusion initiatives are aimed at enhancing the level of financial education, facilitating financial access, improving the quality of financial services, and taking all necessary practices, procedures, and measures to expand the use of financial services. Hence, exploring how financial inclusion initiatives can drive economic growth must start by considering how various financial services can grow the gross domestic product, which represents the total value of goods and services produced by an economy during a given period. In other words, how can financial services such as deposit, insurance, borrowing, and payment services stimulate the economy to produce and consume more products? Below is a look at several potential ways.

2.1.1. Mobilizing Financial Resources

Commercial banks and similar financial institutions offer deposit services, which allow individuals and institutions to save their funds in special accounts under certain conditions, and as the demand for deposit services increases, banks accumulate substantial funds. Similarly, insurance companies enable individuals

and institutions to benefit from insurance policies that provide coverage against specified risks in exchange for premiums. As the demand for insurance services grows, insurance companies also accumulate significant funds from premiums.

Governments and other institutions can use these pooled financial resources to finance their development and investment projects. Individuals and business owners, who are the primary target of financial inclusion initiatives, can likewise access these resources by opening loan accounts with and borrowing from commercial banks or similar financial institutions. In general, whenever those mobilized financial resources are employed in economic activities such as production and consumption, more products will eventually be consumed.

2.1.2. Financing Economic Activities of Individuals and Businesses

Previously mobilized financial resources, as indicated above, are transferred to individuals and business owners through borrowing services. This is usually done by providing loans to finance personal consumption or to enable micro, small, and medium businesses. Consumer loans granted to individuals are typically used to purchase consumer products (such as automobiles, household electrical appliances, construction materials, etc.), and investment loans to business owners are used to purchase products for commercial use (such as machinery, equipment, raw materials, etc.), and thus expanding the use of credit services means providing more funds for the consumption of more products.

2.1.3. Enabling Businesses

After enabling businesses by supporting them with the necessary funding, they may continue to consume more products after entering the activity phase if they are newly established or after expanding their activities, as they then consume more products than before. Moreover, these enterprises can also produce other products that meet the local market needs in certain fields. Thus, it can be said that borrowing services, by enabling businesses, serve in another way to stimulate the production and consumption of more products.

2.1.4. Financing Deferred Spending

Individuals and institutions often save their money in banks and similar financial institutions with the expectation of utilizing it later to meet their expenses. By doing so, they defer potential spending until later. This spending

occurs when depositors withdraw their funds and spend them in a way that ultimately results in the consumption of more products. A similar thing occurs when the policyholders spend the financial compensation received from insurance companies as coverage against the insured risks for which they previously paid specific premiums[3].

2.1.5. Stimulating E-commerce

Electronic payment cards, such as debit cards and credit cards, play a pivotal role in facilitating online transactions of goods and services. Accordingly, they contribute to the growth of local e-commerce, which in turn boosts the level of commercial exchange and leads to increased consumption of more products. Moreover, with the ability to overdraw credit cards, individuals can obtain credit facilities to finance their purchases and consume more products.

In addition to all of the above, banks and financial institutions can generate additional revenues and profits from the expanded use of financial services, which may reflect positively on economic growth if those incomes are reinvested and employed in economic activities. Heightened economic activity may increase the government's tax revenues, thereby enhancing its ability to expand public spending in the future, which in turn may also stimulate production and consumption levels. Furthermore, the increased incomes of the workers who have contributed to the heightened economic activity resulting from the expanded use of financial services enable them to spend more and consume more products. In all cases, if these consumed products are produced locally, using local resources, financial services in this way stimulate production activities by increasing consumption levels, which positively affects the GDP.

It should be noted that these positive effects of expanding the use of financial services thusly are also supported by some fundamental ideas in economics, as described below:

▪ ***The role of capital.*** Expanding deposit and insurance services provides banks and financial institutions with additional funds that allow them to expand lending and investment. In this way, the economy is provided with "capital", which is one of the essential inputs in the production process.

▪ ***Money as a medium of exchange.*** Transferring mobilized funds to finance economic activities results in consuming products equal to the amount of

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[3] So, as a brief definition of "deferred spending" is spending that is deferred to later periods.

financial resources transferred. In general, whenever there is a way to spend more money, more products will be proportionally consumed, since money is originally a means of exchange for goods and services.

▪ *Hirschman's forward and backward linkages.* Enabled businesses may create basic products that can be used as inputs in other industries (a forward link), or they may also create new industries based on existing products (a backward link). Similarly, financial institutions provide "finance services" that almost every business needs, which can also be considered a forward link. This also applies to all financial services that contribute to the development of businesses, as is the case with modern payment services that revitalize the e-commerce industry. Consequently, the financial institutions sector can revitalize many other sectors by financially enabling them to create forward and backward linkages that lead to inclusive growth.

3. Immediate and Subsequent Positive Effects

From the foregoing, it is clear that financial services stimulate economic activity in a variety of ways. Some services, such as deposit, insurance, and borrowing services, do so in multiple ways, all of which are reflected positively in the GDP. Some of these ways occur simultaneously with the expansion in the use of these services and are reflected in the GDP as immediate positive effects, while others occur in subsequent periods and are reflected in the GDP as subsequent positive effects. These positive effects stemming from the expanded use of financial services can be visualized as depicted in Figure 1.

Assuming that the immediate positive effects are determined by the extent of the expansion in the use of financial services, these effects can thus be captured during periods of significant expansion in use. Moreover, it is also possible to capture the subsequent positive effects even in periods with no or only a small expansion in the use of financial services, where the size of the immediate effects diminishes accordingly and the subsequent effects appear, as assumed, due to several factors resulting from the expanded use of financial services in previous periods. Therefore, an expansion in financial services usage in a given period may lead to the emergence of positive effects on the GDP (immediate positive effects). Thereafter, even if there is no further expansion or only a small expansion in usage, other positive effects may appear on the GDP (subsequent positive effects).
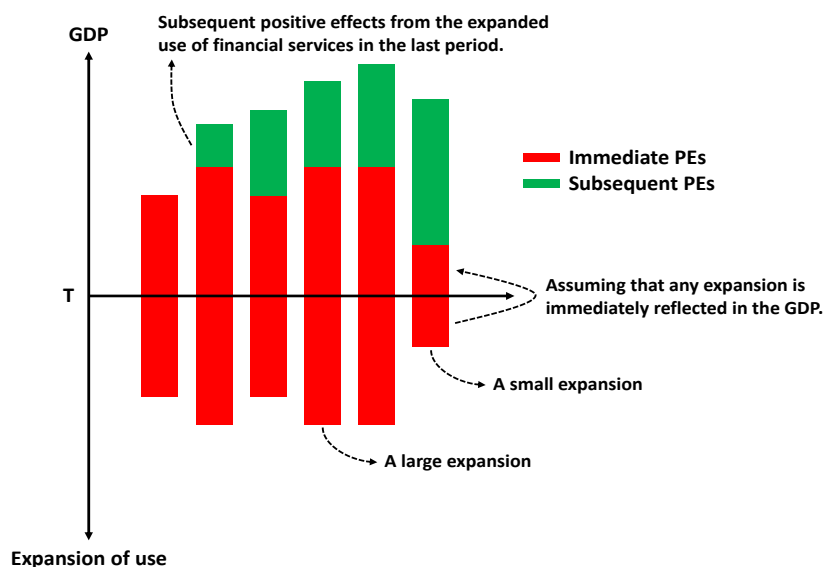
Figure 1. Schematic Representation of Immediate & Subsequent Positive Effects

Notes: (A) The "expansion of use" represents the increase in the total number of financial products that have already been used by society. The expansion in this form can be either large or small, as shown above. (B) The size and timing of these positive effects on the GDP are given here only as a rough estimate.

If the expansion in financial services usage is represented by appropriate quantitative indicators, it follows from the above proposition that, from an econometric standpoint, the response of the GDP indicator to the increase in the financial services expansion indicators is quite different from its response to the decrease in the same indicators. In time points where the expansion indicators increase, the GDP indicator is likely to exhibit a positive response; that is, the GDP indicator will increase with the increase in the expansion indicators. In contrast, when the expansion indicators decrease, the response of the GDP indicator may follow one of two scenarios:

- The first scenario is that it is likely to exhibit a lower positive response, i.e., the GDP indicator will decrease with the decrease of the financial services expansion indicators, but it will decrease at a rate less than the average rate at which it increased as a result of the increase in the same indicators. In other words, the GDP indicator increases at a rate, but decreases at a lower

rate, with the increase and decrease in the expansion indicators at the same rate[4].

- The second scenario is that it is likely to exhibit a negative response, i.e., the GDP indicator will increase with the decrease in the financial services expansion indicators. These scenarios are illustrated in Figure 2 at right.

Figure 2. Possible Scenarios for the Response of the GDP Indicator
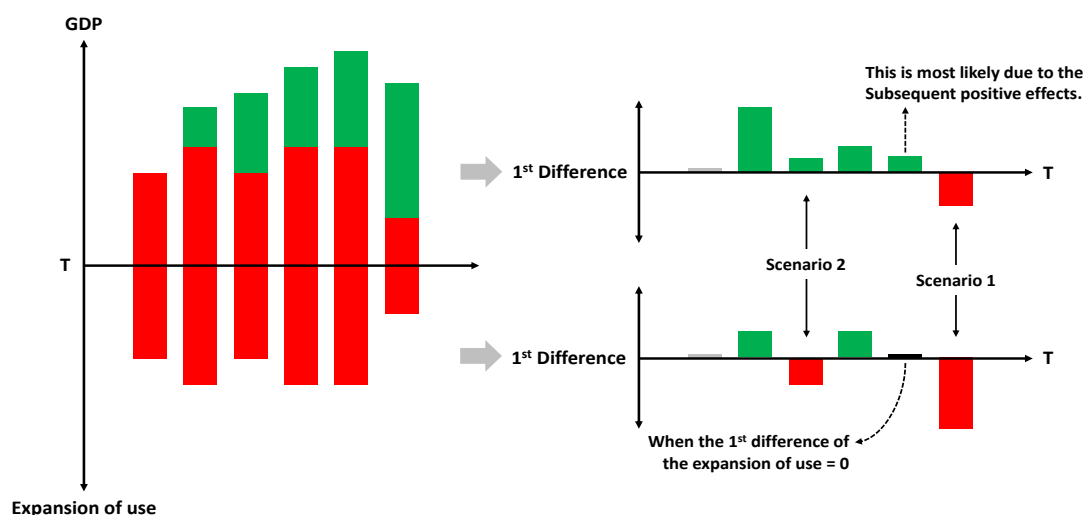
In this form, the dynamics of the relationship between the GDP indicator and financial services expansion indicators differed from that of conventional relationships in econometrics. In linear relationships, as an example, the response of the dependent variable to the increase in the independent variable is assumed to be similar to its response to the decrease in the independent variable itself. The dependent variable here increases at an estimated rate when the independent variable increases and decreases at the same rate when the independent variable decreases, in the case of direct or positive relationships, and versa vis for inverse or negative relationships. Knowing that in all cases the increase and decrease in the independent variable are at the same rate. The situation is different in the current study because the response of the GDP indicator to the increase in the financial services expansion indicators is distinct from its response to the decrease

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[4] As a brief definition, "lower positive response" is a state in which the dependent variable's two positive responses to increases and decreases in the independent variable are unequal.

in the same indicators. The existence of different responses to the dependent variable in its relationship to the independent variable under certain conditions is the key idea of different-responses relationships or mixed relationships.

4. Methodology

In order to verify the validity of the aforementioned scenarios, it was necessary to find a method for determining the response of the GDP indicator at those time points when the financial services expansion indicators increased, on the one hand, and at those time points when these indicators decreased, on the other hand. The response here refers to the direction and magnitude of the change in the GDP indicator at these time points.

The current study uses a special econometric modeling founded on the idea of conducting a regression based exclusively on data from a set of predetermined time points. This starts by extracting the movements of the financial services expansion indicators and the corresponding responses of the GDP indicator by taking the first differences for all indicators. Afterward, dummy variables are created that distinguish the time points in which the expansion indicators increased, and other dummy variables distinguish the time points in which these indicators decreased. Finally, by linking the data on the movements of the expansion indicators to the dummy variables that distinguish the desired time points, a regression can then be run to estimate the GDP response at those exact time points. This idea is implemented in three stages, starting with determining the variables, designing the econometric models, and then estimating process, which is done here using the EViews econometric package.

4.1. Study Variables

The study uses a set of measures, as shown in Table 1, as quantitative indicators to express the expansion in the use of financial services. These indicators were generated using secondary panel data retrieved from the IMF's Financial Access Survey database, as well as GDP data from the World Bank's World Development Indicators database. The data covers 10 countries from 2009 to 2019 such as Argentina, Armenia, Chile, Costa Rica, Georgia, India, Moldova, Montenegro, Poland, Saudi Arabia (see Appendix A). What distinguishes these countries is that the percentage of adults over the age of 15 who have an account with a bank or other financial institution, which is a broader measure of financial inclusion, has evolved significantly in recent years. Accordingly, if financial

inclusion initiatives are indeed having a positive impact on economic growth, it will be evident in the case of these countries, which have seen a gradual evolution in the level of financial inclusion, as shown in Figure 3.
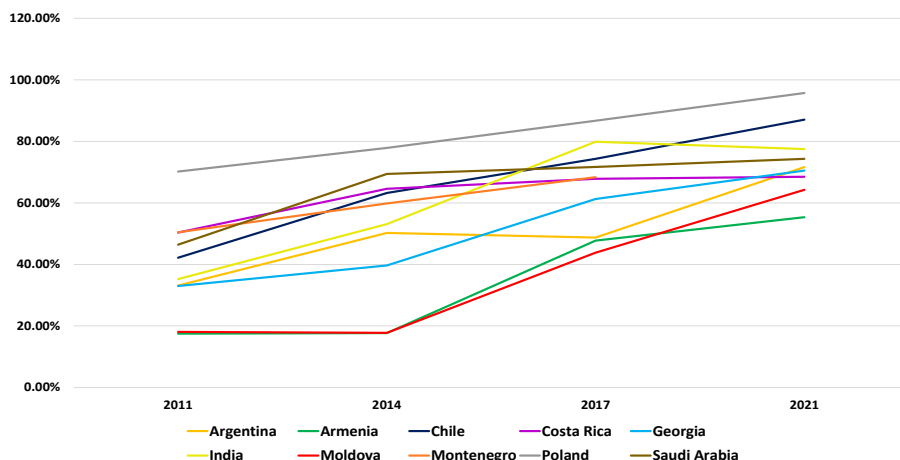
Figure 3. Evolution of the percentage of adults with an account at a bank or other financial institution in the sample countries

Notes: Based on the above measure, these countries are among those that have achieved significant development in the level of financial inclusion. However, other countries could have been included had their data been available for the study.
Data Source: World Bank's Global Financial Inclusion database.

Now, to determine the response of the GDP indicator at the time points in which financial services expansion indicators increased and at the other time points in which they decreased, it must:

- **The first step:** take the first differences for all the indicators. By doing so, the magnitude of the upward and downward movements of the financial services expansion indicators will be extracted, as well as the corresponding responses of the GDP indicator.
- **The second step:** Create dummy variables that distinguish the time points when the expansion indicators increased by 1 and eliminate the others by 0 and other dummy variables that distinguish the time points when these indicators decreased and eliminate the others by 0. The first step facilitates the second step, since the positive differences correspond to the time points when the expansion indicators increased,

while the negative differences correspond to the time points when these indicators decreased[5].

Table 1. The Method of Generating Representative Indicators

Basic data →	Transformations →	Representative indicators
Number of deposit accounts		Deposit services expansion indicator (denoted *(EDEP)*)
Number of insurance policies	Relative change in the data: $$\frac{(d_t+d_{t-1})}{d_{2009}}\times100$$	Insurance services expansion indicator *(EINS)*
Number of loan accounts		Borrowing services expansion indicator *(EBOR)*
Number of payment cards (debit and credit cards)		Payment services expansion indicator *(EPAY)*
GDP in current U.S. dollars	Relative reflection of data: $$\frac{d_t}{d_{2009}}\times100$$	GDP indicator *(GDP)*

Notes: (A) It should be noted that Poland's data on the number of deposit accounts in 2009 and 2010, Moldova's data on the number of loan accounts in 2009 and 2010, and Armenia's data on the number of debit cards and credit cards in 2009 are not available from the source. Instead of excluding these countries and losing a large part of the available data, the matter was remedied by putting the data of the following years in place of the unavailable data, i.e., the data of 2011 in place of 2010 and 2009, and the data of 2010 in place of 2009, on the assumption that the use of financial services is expanding and therefore the data and related indicators tend to rise over time. This step at least does not distort that upward trend in the use of these financial services; on the other hand, it provides balanced panel data.

(B) GDP in current U.S. dollar prices was chosen to mitigate the effects of inflation by taking advantage of the relative stability of the U.S. dollar, as well as to standardize the unit of measurement across the sample countries. The basic data for financial services, while originally considered as usage indicators, have been reformulated to reflect the expansion of use.

(C) Previously, the expansion of use was defined as the increase in the total number of financial products. The difference in the basic data for financial services usage indicators could have been used to represent that expansion in use. Instead, in order to simplify the unit of measurement, the relative change has been calculated according to the above formula, as it gives similar results to those that would have been obtained by using the difference. The relative reflection of GDP data was also used to convert the numerical value of the GDP into a percentage, based on the reference year of 2009.

(D) All data and indicators used in this study are available in Appendix A.

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[5] These time points can be automatically distinguished by using the conditional functions available in Excel or any other spreadsheet program.

By applying the previous steps, two sets of variables are obtained. The main variables include the first differences of the four indicators representing the expansion in financial services usage and denoted by (D_EDEP_{it}), (D_EINS_{it}), (D_EBOR_{it}), and (D_EPAY_{it}), as well as the first differences of the GDP indicator (D_GDP_{it}), which thus represents economic growth. It can be seen from Table 2 shows the statistics of the Im, Pesaran, and Shin (IPS) tests and their associated probability values. It strongly rejects the null hypothesis of a unit root, thus confirming the stationarity of the time series for all the main variables. Moreover, there are dummy variables that distinguish the time points in which financial services expansion indicators increased *(INC_Ind.)* and others that distinguish the time points in which these indicators decreased *(DEC_Ind.)*.

Table 2. Results of IPS Unit Root Tests

	D_EDEP	D_EINS	D_EBOR	D_EPAY	D_GDP
IPS W-stat	-7.87545 (0.0000)	-5.82510 (0.0000)	-6.10616 (0.0000)	-4.89103 (0.0000)	-2.51654 (0.0059)
Truncated CIPS	-3.37627 (<0.01)	-4.35382 (<0.01)	-3.12338 (<0.01)	-3.32163 (<0.01)	-2.30444 (<0.10)

Notes: (A) NULL hypothesis: Unit root. (B) Probability values in parentheses. (C) The sample countries have experienced significant developments in the level of financial inclusion, resulting in successive expansions in the use of financial services, which are expected to have positive effects on the GDP of these countries throughout the period studied. Therefore, due to the common events known to the sample countries and their expected impact on the GDP of these countries, it is natural that the data related to the main variables respond similarly across the sample countries, making them appear cross-sectionally dependent from an econometric point of view. (D) After carrying out the necessary tests to verify that, it has been shown that there is indeed a correlation between the cross-sectional observations of the variables (D_EINS_{it}), (D_EPAY_{it}), and (D_GDP_{it}), unlike the other main variables. Taking into account these considerations, in addition to the case of heteroscedasticity and the small sample size (N,T=10), the traditional IPS test was used specifically to examine the presence of a unit root in the time series of the variables (D_EDEP_{it}) and (D_EBOR_{it}), which are cross-sectionally independent, while the truncated version of the cross-sectionally augmented IPS test (CIPS) was used for its suitability in the case of cross-sectionally dependent variables (Pesaran, 2007). It should be noted that all the above tests were estimated with one lag, including the constant, to avoid low estimation efficiency given the limited number of observations (100 obs.).

In the next stage, all the variables mentioned above will be combined in regression models in order to determine the response of the GDP indicator at the time points in which the financial services expansion indicators increased, on the one hand, and at the time points when they decreased, on the other hand.

4.2. Econometric Model

The variable (D_EDEP$_{it}$) represents the first differences for the deposit services expansion indicator, and the variable (D_GDP$_{it}$) represents the first differences for the GDP indicator. For the sake of determining the response of the GDP indicator to the deposit services expansion indicator at the time points specified by the dummy variables (INC_EDEP) and (DEC_EDEP), the regression model should be formulated as the following equation:

$$D\_GDP_{it} = \alpha_1(INC\_EDEP \times D\_EDEP_{it}) + \alpha_2(DEC\_EDEP \times D\_EDEP_{it}) + \alpha_3(D\_EINS_{it}) + \alpha_4(D\_EBOR_{it}) + \alpha_5(D\_EPAY_{it}) + u_{it} \qquad (1)$$

Where (*i*) denotes the cross-sections and represents the 10 countries selected as a sample for the study, and (*t*) refers to the time dimension, which is limited to 10 years from 2010 to 2019.

The dummy variable *(INC_EDEP)* distinguishes the time points in which the depo-sit services expansion indica-tor increased. Table 3 shows that the sum of these time points is 56 points. The same for the dummy variable (*DEC_EDEP)* that distinguishes the 44 time points in which the deposit services expansion indicator decreased. By multiplying these two dummy variables with the variable *(D_EDEP$_{it}$)*, as shown in the regression model above, the estimation of the coefficients *(α$_1$)* and *(α$_2$)* is constrained on the data associated with the variables *(D_EDEP$_{it}$)* and *(D_GDP$_{it}$)* at exactly these time points. These coefficients will hence provide information on how the GDP indicator responds to the increase and decrease in the deposit services expansion indicator. In order to reduce the possibility of obtaining overestimations for coefficients *(α$_1$)* and *(α$_2$)*, coefficients *(α$_3$)*, *(α$_4$)*, and *(α$_5$)* have been assigned to contain the effects resulting from the expanded use of other financial services. As for *(u$_{it}$)* in the regression model, it represents the disturbance term or the error term, and its function is to capture other effects of events that occurred in irregular periods and were not taken into account, in addition to its role of containing estimation errors in certain situations.

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hence provide information on how the GDP indicator responds to the increase and decrease in the deposit services expansion indicator. In order to reduce the possibility of obtaining overestimations for coefficients (α_1) and (α_2), coefficients (α_3), (α_4), and (α_5) have been assigned to contain the effects resulting from the expanded use of other financial services. As for (u_{it}) in the regression model, it represents the disturbance term or the error term, and its function is to capture other effects of events that occurred in irregular periods and were not taken into account, in addition to its role of containing estimation errors in certain situations.

Table 3. Descriptive Statistics

D_Ind.	D_EDEP	D_EINS	D_EBOR	D_EPAY	D_GDP
Mean	0.0103	0.0424	0.006	0.0089	0.0713
Median	0.012	0.025	0.0013	0.0109	0.0742
Maximum	0.4678	2.8593	0.5189	0.4898	0.3333
Minimum	-0.5057	-2.4612	-0.8433	-0.5772	-0.3568
Std. Dev.	0.1453	0.5102	0.2114	0.186	0.1352
Skewness	-0.1337	0.7356	-0.6042	-0.1385	-0.5894
Kurtosis	5.713	16.8773	5.895	3.9481	3.9384
Jarque-Bera	30.9668	811.4355	41.0052	4.0653	9.4578
Probability	0.0000	0.0000	0.0000	0.130987	0.008836
Observations	100	100	100	100	100
INC_Ind.	56	53	52	55	
DEC_Ind.	44	47	48	45	

Regarding the issue of not including the constant term in the regression model, there are two reasons for that. First, all the selected countries have in common the fact that they have experienced expansions in the use of financial services throughout the period under study, and, in turn, it is expected that this will be accompanied by the appearance of positive effects on the GDP of these countries. If this is achieved, these expansions in the use of financial services will largely explain the positive changes in the GDP of the sample countries throughout the study period. From this point of view, these countries, which have experienced similar events that are expected to lead to similar results, can be considered as units with common characteristics[6]. At another point, under the

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[6] This proposition is also supported by the redundant fixed effects tests (F-test and Chi-square test) included in the EViews package, as they confirm that there is no need to add a constant term for each cross-section, in a clear indication that the expansions in the use of financial services, that occurred during the study period, were a prominent and influential

assumption that the immediate positive effects appear with the expansion of use and are determined on its basis, the continued expansion of use at the same pace (i.e., $(D\_EDEP_{it}) = 0$) theoretically means that the immediate positive effects will also be repeated to the same extent, so that the GDP will not achieve any significant additional growth, but if the opposite happens, as the subsequent positive effects appear, it will be captured, as designed, by the coefficient (α_2). Accordingly, there is no need to add the constant term to the regression model, which will be estimated as a pooled regression model with fixed coefficients.

4.3. Estimation Procedure

According to the Jarque-Bera statistics reported in Table 3, it appears that all the main variables, except for the variable (D_EPAY_{it}), do not follow the normal distribution because they contain outliers. In this case, if the ordinary least squares (OLS) method is used to estimate the regression model, it may not be possible to obtain a constant variance for the error term (Gujarati & Porter, 2009). In addition, OLS does not deal with the problem of contemporaneous correlation between cross-sectional errors, which has been shown to exist, because the main variables are already cross-sectionally correlated. Possibly also because subsequent positive effects that coincide with periods of significant expansion in the use of financial services cannot be captured separately by the regression model, so they are included in the error term. Thus, if these effects occur simultaneously for most of the sample countries, most of the errors at that time may interact positively with them, suggesting that there is a contemporaneous correlation between the cross-sectional errors. It is also not excluded that there is a serial correlation between the one cross-section errors, given the assumption that the positive effects of the expanded use of financial services extend over time from the immediate effects to subsequent effects.

As an alternative to OLS, Parks (1967) proposed the so-called feasible or estimated generalized least squares (FGLS or EGLS) method in order to deal with heteroscedasticity, contemporaneous correlation, and serial correlation problems. This method transforms the original regression model (regression model 1) with a general error covariance matrix into another regression model with an error covariance matrix that satisfies the OLS estimation conditions. This transformation is accomplished by first eliminating the serial correlation of the errors and then eliminating the contemporaneous correlation and heteroscedasticity, on the basis

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event in all the sample countries, so much so that they caused the GDP of these countries to respond similarly throughout that period.

that the contemporaneous correlation automatically corrects for the panel heteroscedasticity of the errors. This is initially done by estimating the original regression using OLS. The residuals of this regression are used to estimate the cross-sectional serial correlation of the errors, which is then used to transform the original regression into one with serially independent errors. The residuals from the last regression model are then used to estimate the contemporaneous correlation of the errors, which is used to transform this regression model into another one with cross-sectionally independent errors, which can then be estimated using OLS (N. Beck & Katz, 1995). From the original regression model, 10 sub-regression models will be generated for each cross-section, with an equation and coefficients to be estimated. These sub-regressions will be treated as seemingly unrelated regressions until appropriate transformations are made to the data and OLS is run accordingly to estimate the constant coefficients of the original regression model.

Similarly, the regression models below will be estimated for the sake of determining the response of the GDP indicator to the increase and decrease in the indicators of expansion in the use of insurance services, borrowing services, and payment services, respectively. All estimates will be obtained using the Pooled EGLS (Cross-section SUR) option in the EViews package.

$$D\_GDP_{it} = \alpha_6(INC\_EINS \times D\_EINS_{it}) + \alpha_7(DEC\_EINS \times D\_EINS_{it}) \\ + \alpha_8(D\_EDEP_{it}) + \alpha_9(D\_EBOR_{it}) + \alpha_{10}(D\_EPAY_{it}) + u_{it} \quad (2)$$

$$D\_GDP_{it} = \alpha_{11}(INC\_EBOR \times D\_EBOR_{it}) + \alpha_{12}(DEC\_EBOR \times D\_EBOR_{it}) \\ + \alpha_{13}(D\_EDEP_{it}) + \alpha_{14}(D\_EINS_{it}) + \alpha_{15}(D\_EPAY_{it}) + u_{it} \quad (3)$$

$$D\_GDP_{it} = \alpha_{16}(INC\_EPAY \times D\_EPAY_{it}) + \alpha_{17}(DEC\_EPAY \times D\_EPAY_{it}) \\ + \alpha_{18}(D\_EDEP_{it}) + \alpha_{19}(D\_EINS_{it}) + \alpha_{20}(D\_EBOR_{it}) + u_{it} \quad (4)$$

5. Results and Discussion

Overall, the estimation outputs confirm that the response of the GDP indicator to the increase in the financial services expansion indicators differs from its response to the decrease in the indicators themselves. It should be noted that this result is supported by strong statistical indicators that increase its reliability (spherical errors, high level of statistical significance, and high goodness of fit).

5.1. GDP Response to Deposit Services Expansion

Table 4 suggests that the 100% escalation in the deposit services expansion indicator was counterbalanced by an average uptick of 35.11% in the GDP indicator, evincing a positive response in model 1. On the other hand, the same rate of decrease in the same indicator was offset by an average decrease of 5% in the GDP indicator (a lower positive response). This means that most of the periods of significant expansion in the use of deposit services between 2010 and 2019 were accompanied by growth in the GDP of the sample countries. This is due to the employment of financial resources derived from deposit accounts in financing economic activities; the greater the expansion of deposit services, the greater the possibility of employing more funds and, therefore, the greater the growth of GDP. Added to this is the effect of financing depositors' withdrawal of part of the funds deposited in previous periods and spending them to consume more products, in the context of what is known as the financing of the depositors' deferred spending. This process may extend to subsequent periods, and this is evident in periods where there was no significant expansion in the use of deposit services, as it is noted that the GDP of the sample countries has decreased only slightly (5%). This is probably due to the positive effects of financing the deferred spending of depositors and perhaps also to the employment of the funds that depositors add to their accounts.

Table 4. Output of Regression Model 1

	Coefficient	Standard error	t-statistic	Probability
α_1	0.351117	0.002285	153.6393	0.0000
α_2	0.050039	0.002404	20.81712	0.0000
α_3	0.003712	0.000681	5.452070	0.0000
α_4	0.074326	0.001761	42.19603	0.0000
α_5	0.120612	0.001754	68.76492	0.0000

R^2 (Weighted stat): 0.997187

Adj. R^2 (Weighted stat): 0.997069

Standard error of the regression (Weighted stat): 1.013845

Durbin-Watson stat (Weighted stat): 1.986073

Jarque-Bera stat [Probability]: 1.841602 [0.398200]

5.2. GDP Response to Insurance Services Expansion

Table 5 estimates that the GDP of the sample countries responded differently to the increase and decrease in the insurance services expansion indicator in model 2. In most of the periods of significant expansion of use, it was observed that GDP grew, and it also grew at the same pace in the periods of no significant expansion of use. This is because the increasing demand for insurance services ensures that insurance companies accumulate additional financial resources. Usually, a large part of these mobilized funds is invested in income-generating assets, and from its revenues, claims due in favor of policyholders are also paid. Therefore, the employment of these mobilized financial resources, together with the financing of the deferred spending of the policyholders, may greatly explain the growth in the sample countries' GDP during periods of significant expansion in the use of insurance services.

Table 5. Output of Regression Model 2

	Coefficient	Standard error	t-statistic	Probability
α_6	0.038635	0.001196	32.29385	0.0000
α_7	-0.042006	0.001436	-29.25827	0.0000
α_8	0.182565	0.004100	44.52397	0.0000
α_9	0.084866	0.002175	39.01694	0.0000
α_{10}	0.126776	0.002485	51.01898	0.0000

R^2 (Weighted stat): 0.993806

Adj. R^2 (Weighted stat): 0.993546

Standard error of the regression (Weighted stat): 0.976687

Durbin-Watson stat (Weighted stat): 1.963689

Jarque-Bera stat [Probability]: 0.169774 [0.918616]

Even if there is no subsequent demand for these services later, insurance companies with the same number of insurance contracts in their possession will still be able to collect new financial resources, given that these contracts are valid for certain periods and are renewed by paying new premiums. These funds, together with the profits that insurance companies have made from the sale of insurance policies and other investments in previous years, allow them to constantly double their financial resources to invest again in the future. Therefore, the ability of insurance companies to reinvest with more financial resources, in addition to the financing of the policyholders' deferred spending during periods when there was no significant expansion in the use of insurance

services, may be factors behind the growth of the sample countries' GDP in these periods.

5.3. GDP Response to Borrowing Services Expansion

Commercial banks and similar financial institutions employ the funds they mobilize through borrowing services in order to finance the economic activities of individuals and business owners. This explains the sample countries' GDP growth during most of the periods of significant expansion in the use of borrowing services, as indicated by the results of regression 3 in Table 6. According to the same estimates, the GDP of the sample countries also experienced remarkable growth even in subsequent periods when there was no significant expansion in use. This is likely thanks to the enabling of businesses that were financed in previous periods and entered into service, where at that stage they are more effective with the consumption and production momentum they generate. These businesses may also provide their owners and workers with additional income, the spending of which leads to the consumption of more products. Besides, the business owners are obligated to repay the loans that they previously benefited from in the form of installments, containing all interest and fees. The re-employment of these installments, in addition to the previous factors, can be a reason for the growth of the sample countries' GDP in periods where there was no significant expansion in the use of borrowing services.

Table 6. Output of Regression Model 3

	Coefficient	Standard error	t-statistic	Probability
α_{11}	0.319952	0.004714	67.87727	0.0000
α_{12}	-0.107060	0.004063	-26.35276	0.0000
α_{13}	0.158921	0.003040	52.27183	0.0000
α_{14}	0.001692	0.001629	1.038831	0.3015
α_{15}	0.133257	0.003657	36.44323	0.0000

R^2 **(Weighted stat):** 0.984446

Adj. R^2 (Weighted stat): 0.983791

Standard error of the regression (Weighted stat): 0.999105

Durbin-Watson stat (Weighted stat): 1.977093

Jarque-Bera stat [Probability]: 2.757247 [0.251925]

5.4. GDP Response to Payment Services Expansion

Payment cards contribute to increasing the level of commercial exchange by stimulating e-commerce. This may justify the growth in the sample countries' GDP in periods of significant demand for these cards of various types[7], depending on the results of Regression 4 in Table 7. As the frequency of use of these cards increases, GDP continues to grow further, which is evident during periods when there is no significant demand for payment cards. To illustrate this point, suppose that in one year, 1 million debit cards were issued and their use resulted in the commercial exchange of various goods and services with a total value of $1 million (it is assumed that $1 million is the value that will be reflected in GDP). In the following year, no additional number of debit cards is issued; however, the cards issued in the previous year (1 million cards) had a commercial exchange of 1 million three hundred thousand dollars (it is assumed that this is the value that will be reflected in the GDP). In this scenario, it is noted that the increase in the use of debit cards (whether by increasing the number of times these cards were used or by increasing the volume of transactions conducted through them, or both) contributed to the growth of the GDP by three hundred thousand dollars, even though no additional debit cards were issued.

Table 7. Output of Regression Model 4

	Coefficient	Standard error	t-statistic	Probability
α_{16}	0.346566	0.005166	67.08908	0.0000
α_{17}	-0.103222	0.004912	-21.01258	0.0000
α_{18}	0.186653	0.004749	39.30664	0.0000
α_{19}	-0.005077	0.001848	-2.747149	0.0072
α_{20}	0.090275	0.003867	23.34660	0.0000

R^2 (Weighted stat): 0.981631

Adj. R^2 (Weighted stat): 0.980857

Standard error of the regression (Weighted stat): 1.000595

Durbin-Watson Stat (Weighted stat): 1.998398

Jarque-Bera stat [Probability]: 1.457107 [0.482607]

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[7] It is not appropriate to say "... during periods of significant expansion for these cards of all types," because a person obtaining his own payment card does not necessarily mean that he has already used it. Unlike the case of opening a loan account or a deposit account, where it can be said that borrowing services or deposit services have already been used.

6. Conclusion

Financial inclusion initiatives expand the use of financial services among members of society. These services can stimulate the economy to produce and consume more goods and services in several ways that are positively reflected in GDP. Some of these ways are what happens in conjunction with the expansion in the use of financial services and are reflected in the GDP as immediate positive effects, and some of them are what happens in the subsequent periods after that and are reflected as subsequent positive effects. This proposition interprets the mixed relationship that was observed between the financial services expansion and the GDP as the latter responding positively to the increase in the indicators of financial services expansion due to the immediate positive effects and, at the same time, responding negatively to the decrease in the same indicators due to the subsequent positive effects.

In the presence of two such different responses in the relationship between the dependent and independent variables, linear estimates of all the dependent variable's responses to the independent variable's movements will give results that reflect the average of those two responses. For example, all the linear estimators (α_8), (α_{13}), and (α_{18}) for the response of the GDP indicator to movements of the deposit services expansion indicator are close to 0.18[8], and this is approximately equal to 0.20, the average of the estimators (α_1) and (α_2) for the response of the GDP indicator to increases and decreases in the deposit services expansion indicator, respectively[9]. In other words, the linear estimators merge the different responses of the dependent variable and estimate them in an average value, which in turn hides important information about the difference between those responses at the increase and decrease of the independent variable. This is an important issue that should have been pointed out in an attempt to prove the concept of mixed relationships in which the response of the dependent variable varies with the increase and decrease in the independent variable. Future research would also be desirable to discuss and prove this type of functional relationship using other econometric methodologies that allow regression analysis to be performed based solely on data from a set of predetermined time points.

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[8] $(\alpha_8 + \alpha_{13} + \alpha_{18})/3 \approx 0.18$.

[9] The same applies to the average linear estimators of GDP responses to the movements in the indicators of expansion in insurance services $((\alpha_3 + \alpha_{14} + \alpha_{19})/3 \approx 0.00)$, borrowing services $((\alpha_4 + \alpha_9 + \alpha_{20})/3 \approx 0.08)$, payments services $((\alpha_5 + \alpha_{10} + \alpha_{15})/3 \approx 0.13)$, as they are roughly equivalent to the average estimators of GDP responses to the increase and decrease in the same indicators $((\alpha_6 + \alpha_7)/2 \cong 0.00$, $(\alpha_{11} + \alpha_{12})/2 \approx 0.11$, and $(\alpha_{16} + \alpha_{17})/2 \approx 0.12$, respectively).

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APPENDICES

Appendix A. Basic Data and Representative Indicators

COUNTRY	YEAR	GDP	Number of deposit accounts	Number of insurance policies	Number of loan accounts	Number of payment cards	GDP indicator	Deposit services expansion indicator (EDEP)	Insurance services expansion indicator (EINS)	Borrowing services expansion indicator (EBOR)	Payment services expansion indicator (EPAY)
Argentina	2009	3.3298E+11	25817977	24076657	12604478	38816938	100.00%	0.00%	0.00%	0.00%	0.00%
Argentina	2010	4.2363E+11	27593031	26575053	13289315	40669854	127.22%	6.88%	10.38%	5.43%	4.77%
Argentina	2011	5.3016E+11	29708416	28445078	14591830	47784189	159.22%	8.19%	7.77%	10.33%	18.33%
Argentina	2012	5.4598E+11	34388041	34065306	15900238	54934924	163.97%	18.13%	23.34%	10.38%	18.42%
Argentina	2013	5.5203E+11	37424264	35291073	14455723	60752133	165.79%	11.76%	5.09%	-11.46%	14.99%
Argentina	2014	5.2632E+11	40390800	35779561	15090681	67491663	158.07%	11.49%	2.03%	5.04%	17.36%
Argentina	2015	5.9475E+11	46088714	35376059	17519436	72338549	178.62%	22.07%	-1.68%	19.27%	12.49%
Argentina	2016	5.5753E+11	53091759	37758582	18107653	78326387	167.44%	27.12%	9.90%	4.67%	15.43%
Argentina	2017	6.4363E+11	59899002	39153709	18592753	85365442	193.30%	26.37%	5.79%	3.85%	18.13%
Argentina	2018	5.2482E+11	65059543	39911490	19224283	89830205	157.61%	19.99%	3.15%	5.01%	11.50%
Argentina	2019	4.4775E+11	68384739	44317159	18996931	90047228	134.47%	12.88%	18.30%	-1.80%	0.56%
Armenia	2009	8647936748	1281926	50646	241979	728274	100.00%	0.00%	0.00%	0.00%	0.00%
Armenia	2010	9260284938	1446481	52414	358098	728274	107.08%	12.84%	3.49%	47.99%	0.00%
Armenia	2011	10142111334	1755742	198992	458005	976695	117.28%	24.12%	289.42%	41.29%	34.11%
Armenia	2012	10619320049	2098082	406728	578945	1322840	122.80%	26.71%	410.17%	49.98%	47.53%
Armenia	2013	11121465767	2504634	563136	696595	1562300	128.60%	31.71%	308.83%	48.62%	32.88%
Armenia	2014	11609512940	3031743	594893	879065	1622418	134.25%	41.12%	62.70%	75.41%	8.25%
Armenia	2015	10553337673	3334068	591859	857464	1728926	122.03%	23.58%	-5.99%	-8.93%	14.62%

Armenia	2016	10546135160	3672007	633727	881100	1570138	121.95%	26.36%	82.67%	9.77%	-21.80%
Armenia	2017	11527458566	3710333	693708	902898	1714679	133.30%	2.99%	118.43%	9.01%	19.85%
Armenia	2018	12457941907	4130171	826916	1039980	2024070	144.06%	32.75%	263.02%	56.65%	42.48%
Armenia	2019	13619291361	4707917	976156	1224500	2390372	157.49%	45.07%	294.67%	76.25%	50.30%
Chile	2009	1.71413E+11	27248306.42	12250529	11647085	12451460	100.00%	0.00%	0.00%	0.00%	0.00%
Chile	2010	2.17105E+11	29015347	12506616	12758936	16261848	126.66%	6.48%	2.09%	9.55%	30.60%
Chile	2011	2.51225E+11	31516870	13828731	14100002	18894495	146.56%	9.18%	10.79%	11.51%	21.14%
Chile	2012	2.67176E+11	33248902	13648754	15280703	21331158	155.87%	6.36%	-1.47%	10.14%	19.57%
Chile	2013	2.77239E+11	34867951	16464712	16058824	23157521	161.74%	5.94%	22.99%	6.68%	14.67%
Chile	2014	2.59405E+11	36457152	20388754.01	15923123	27869978	151.33%	5.83%	32.03%	-1.17%	37.85%
Chile	2015	2.42497E+11	38076577	19623446	15718646	32796087	141.47%	5.94%	-6.25%	-1.76%	39.56%
Chile	2016	2.49299E+11	40296646	20814842	15106467	34149433	145.44%	8.15%	9.73%	-5.26%	10.87%
Chile	2017	2.76365E+11	42238012	21667982.04	15643196	34576870	161.23%	7.12%	6.96%	4.61%	3.43%
Chile	2018	2.95403E+11	44323263	23562030	16328396	40292800	172.33%	7.65%	15.46%	5.88%	45.91%
Chile	2019	2.78585E+11	46475799	24472921.87	16447766	38822195	162.52%	7.90%	7.44%	1.02%	-11.81%
Costa Rica	2009	30745712007	5003086	2034761	2579698	5506656	100.00%	0.00%	0.00%	0.00%	0.00%
Costa Rica	2010	37658614803	4929054	1934665	2711937	5894140	122.48%	-1.48%	-4.92%	5.13%	7.04%
Costa Rica	2011	42762617082	5219136	2050606	2845866	6486336	139.08%	5.80%	5.70%	5.19%	10.75%
Costa Rica	2012	47231651863	5318771	1860489	3075079	7161745	153.62%	1.99%	-9.34%	8.89%	12.27%
Costa Rica	2013	50949672206	5575978	2109236	3468659	7474000	165.71%	5.14%	12.22%	15.26%	5.67%
Costa Rica	2014	52016408951	5930351	2261562	3618005	7535695	169.18%	7.08%	7.49%	5.79%	1.12%
Costa Rica	2015	56441917653	6339010	2819186	3913674	8030590	183.58%	8.17%	27.40%	11.46%	8.99%
Costa Rica	2016	58847016045	6934929	3063427	5107840	8242774	191.40%	11.91%	12.00%	46.29%	3.85%

Costa Rica	2017	60516043590	7520378	3560592	5798014	8237600	196.83%	11.70%	24.43%	26.75%	-0.09%
Costa Rica	2018	62420165100	8210065	3585609	5427393	8650374	203.02%	13.79%	1.23%	-14.37%	7.50%
Costa Rica	2019	64417670083	9294604	3853329	5508948	8429448	209.52%	21.68%	13.16%	3.16%	-4.01%
Georgia	2009	10766836277	2659191	1564623	1239554	3309520	100.00%	0.00%	0.00%	0.00%	0.00%
Georgia	2010	12243505583	2884318	2139740	1491283	3064095	113.71%	8.47%	36.76%	20.31%	-7.42%
Georgia	2011	15107441447	3295215	2138564	2059553	3979060	140.31%	15.45%	-0.08%	45.84%	27.65%
Georgia	2012	16488403076	4025678	2654488	2181065	5246175	153.14%	27.47%	32.97%	9.80%	38.29%
Georgia	2013	17189551521	4015596	2572482	2774993	5948691	159.65%	-0.38%	-5.24%	47.91%	21.23%
Georgia	2014	17627003455	4927008	1293503	3227556	7689137	163.72%	34.27%	-81.74%	36.51%	52.59%
Georgia	2015	14953950557	5001495	1389431	3416303	8102755	138.89%	2.80%	6.13%	15.23%	12.50%
Georgia	2016	15141758567	5630050	2251623	4248282	9289203	140.63%	23.64%	55.11%	67.12%	35.85%
Georgia	2017	16242916916	6249537	2182327	4545786	9055256	150.86%	23.30%	-4.43%	24.00%	-7.07%
Georgia	2018	17596922470	6751689	2374629	4312512	7442993	163.44%	18.88%	12.29%	-18.82%	-48.72%
Georgia	2019	17470436259	6608174	2751769	3651843	6726693	162.26%	-5.40%	24.10%	-53.30%	-21.64%
India	2009	1.34189E+12	728268218	358718000	110056177	200301000	100.00%	0.00%	0.00%	0.00%	0.00%
India	2010	1.67562E+12	803953532	386427000	118647882	245879000	124.87%	10.39%	7.72%	7.81%	22.75%
India	2011	1.82305E+12	883884635	408487000	145565829	295930000	135.86%	10.98%	6.15%	24.46%	24.99%
India	2012	1.82764E+12	979881494	420984000	157635100	350751017	136.20%	13.18%	3.48%	10.97%	27.37%
India	2013	1.85672E+12	1125587644	443112000	158453671	350751017	138.37%	20.01%	6.17%	0.74%	0.00%
India	2014	2.03913E+12	1309015395	437302000	171389682.3	413603305	151.96%	25.19%	-1.62%	11.75%	31.38%
India	2015	2.10359E+12	1523235335	444597000	181783683.6	574562206	156.76%	29.41%	2.03%	9.44%	80.36%
India	2016	2.2948E+12	1731498325	452826110	193038573.3	686041237	171.01%	28.60%	2.29%	10.23%	55.66%
India	2017	2.65147E+12	2039853902	487533238	215832635	801491407	197.59%	42.34%	9.68%	20.71%	57.64%

India	2018	2.70293E+12	2129908792	508176638	247597787	898561155	201.43%	12.37%	5.75%	28.86%	48.46%
India	2019	2.83155E+12	2192893805	524492691	287919940	952901809	211.01%	8.65%	4.55%	36.64%	27.13%
Moldova	2009	5439422031	4198667	750879	136479	745615	100.00%	0.00%	0.00%	0.00%	0.00%
Moldova	2010	6974982393	4418522	700447	136479	817520	128.23%	5.24%	-6.72%	0.00%	9.64%
Moldova	2011	8414351672	4616353	744932	136479	911682	154.69%	4.71%	5.92%	0.00%	12.63%
Moldova	2012	8709138765	4766210	746981	148936	1011673	160.11%	3.57%	0.27%	9.13%	13.41%
Moldova	2013	9496717702	5075762	846233	168662	1150977	174.59%	7.37%	13.22%	14.45%	18.68%
Moldova	2014	9510198962	4903878	751827	184477	1302195	174.84%	-4.09%	-12.57%	11.59%	20.28%
Moldova	2015	7745241913	3351199	747199	177661	1290164	142.39%	-36.98%	-0.62%	-4.99%	-1.61%
Moldova	2016	8071469355	3762509	738306	236233	1512110	148.39%	9.80%	-1.18%	42.92%	29.77%
Moldova	2017	9669741744	4041782	791317	212265	1736056	177.77%	6.65%	7.06%	-17.56%	30.04%
Moldova	2018	11457443185	4200292	831679	247186	1936265	210.64%	3.78%	5.38%	25.59%	26.85%
Moldova	2019	11971345003	4300804	862555	299157	2012566	220.08%	2.39%	4.11%	38.08%	10.23%
Montenegro	2009	4159330370	781341	331440	346318	375810	100.00%	0.00%	0.00%	0.00%	0.00%
Montenegro	2010	4143033276	819288	342800	309799	368508	99.61%	4.86%	3.43%	-10.54%	-1.94%
Montenegro	2011	4544516982	926867	364019	271970	354509	109.26%	13.77%	6.40%	-10.92%	-3.73%
Montenegro	2012	4087725813	976296	364199	269137	356922	98.28%	6.33%	0.05%	-0.82%	0.64%
Montenegro	2013	4466039315	885293	400368	257280	396861	107.37%	-11.65%	10.91%	-3.42%	10.63%
Montenegro	2014	4594024180	916556	426589	263415	404305	110.45%	4.00%	7.91%	1.77%	1.98%
Montenegro	2015	4054712083	792677	244574	281838	428899	97.48%	-15.85%	-54.92%	5.32%	6.54%
Montenegro	2016	4377033429	979469	295084	281219	461299	105.23%	23.91%	15.24%	-0.18%	8.62%
Montenegro	2017	4856632399	771140	316590	286215	484211	116.76%	-26.66%	6.49%	1.44%	6.10%
Montenegro	2018	5506766651	880515	362462	285524	429912	132.40%	14.00%	13.84%	-0.20%	-14.45%

Montenegro	2019	5542053845	775809	369787	279276	478856	133.24%	-13.40%	2.21%	-1.80%	13.02%
Poland	2009	4.39738E+11	76422334	58841535	32637202	32839521	100.00%	0.00%	0.00%	0.00%	0.00%
Poland	2010	4.75697E+11	76422334	61504849	32533534	31652930	108.18%	0.00%	4.53%	-0.32%	-3.61%
Poland	2011	5.24383E+11	76422334	60609059	31339408	31734499	119.25%	0.00%	-1.52%	-3.66%	0.25%
Poland	2012	4.95237E+11	75444989	58615749	29159782	32997757	112.62%	-1.28%	-3.39%	-6.68%	3.85%
Poland	2013	5.15765E+11	75614653	59043997	28655672	34369171	117.29%	0.22%	0.73%	-1.54%	4.18%
Poland	2014	5.39088E+11	77176275	61868927	29056756	35786961	122.59%	2.04%	4.80%	1.23%	4.32%
Poland	2015	4.77111E+11	79996949	57557397	28831877	32719089	108.50%	3.69%	-7.33%	-0.69%	-9.34%
Poland	2016	4.70023E+11	82317245	60233492	28668247	34188813	106.89%	3.04%	4.55%	-0.50%	4.48%
Poland	2017	5.24646E+11	86274728	60663198	28822240	36316289	119.31%	5.18%	0.73%	0.47%	6.48%
Poland	2018	5.88783E+11	90582870	62810227	29223269	38440395	133.89%	5.64%	3.65%	1.23%	6.47%
Poland	2019	5.96055E+11	94048194	66474669	29538106	40284563	135.55%	4.53%	6.23%	0.96%	5.62%
Saudi Arabia	2009	4.29098E+11	15206448	3338457	4033913	15728961	100.00%	0.00%	0.00%	0.00%	0.00%
Saudi Arabia	2010	5.28207E+11	16044691	4617235	4314027	14398775	123.10%	5.51%	38.30%	6.94%	-8.46%
Saudi Arabia	2011	6.71239E+11	16563340	5688703	4569126	16431828	156.43%	3.41%	32.09%	6.32%	12.93%
Saudi Arabia	2012	7.35975E+11	16947534	6524718	5151436	18685342	171.52%	2.53%	25.04%	14.44%	14.33%
Saudi Arabia	2013	7.46647E+11	21081190	6577062	5898715	19951343	174.00%	27.18%	1.57%	18.52%	8.05%
Saudi Arabia	2014	7.5635E+11	22085281	6710335	6117660	22616010	176.27%	6.60%	3.99%	5.43%	16.94%
Saudi Arabia	2015	6.5427E+11	24053705	8123501	6105968	25019269	152.48%	12.94%	42.33%	-0.29%	15.28%
Saudi Arabia	2016	6.44936E+11	27431408	7308067	5672233	29160270	150.30%	22.21%	-24.43%	-10.75%	26.33%
Saudi Arabia	2017	6.88586E+11	29358200	5633953	6695286	31147363	160.47%	12.67%	-50.15%	25.36%	12.63%
Saudi Arabia	2018	8.16579E+11	31108804	6012326	6747095	31510205	190.30%	11.51%	11.33%	1.28%	2.31%
Saudi Arabia	2019	8.03616E+11	33931353	7652278	5174270	34581754	187.28%	18.56%	49.12%	-38.99%	19.53%