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THE ROLE OF FINANCIAL INCLUSION IN THE ECONOMIC GROWTH: EVIDENCE FROM NANGARHAR AFGHANISTAN

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Abstract

This article explores the relationship between the financial inclusion index and economic growth in Afghanistan, using annual data from 2009 to 2022. To ascertain the long-term relationship between these variables, the study utilized the Pedroni panel co-integration test and two co-integration regression methods: the Fully Modified Ordinary Least Square (FMOLS) and the Dynamic Ordinary Least Square (DOLS) methods. The Pedroni panel co-integration test confirms the existence of a long-term relationship between financial inclusion and economic growth. The coefficients of FMOLS and DOLS indicate that the financial inclusion index and selected control variables collectively support economic growth. Additionally, the Granger causality test confirmed a bi-directional causality between financial inclusion and economic growth.

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Introduction

Over the past two decades, financial inclusion (FI) has become a key objective, particularly with the rise of the digital economy and advancements in financial technology. FI has emerged as a priority among policymakers due to increasing economic inequality and the need to provide adequate living standards for growing populations in developing countries. National and international regulators have placed FI high on their policy agendas as an enabler of sustainable and inclusive economic growth.

FI indicators have gained importance, especially with the rise of the digital economy and financial technologies. The 2030 Sustainable Development Goals of the United Nations incorporate FI as a target in eight of the 17 goals. The United Nations Development Program highlights the need for a more inclusive financial system as a component of structural transformation and employment creation. The World Bank, along with private and public partners, set ambitious Universal Financial Access goals to enable one billion people to access a transaction account by 2020.

Greater access to financial services for both individuals and firms may help reduce income inequality and accelerate economic growth (Demirguc-Kunt et al., 2015). Since FI is a multifaceted concept, its positive impact on any specific macroeconomic variable cannot be guaranteed per se. However, greater access to financial services through banking sector penetration, particularly to vulnerable categories, including women, entrepreneurs and rural populations, is widely seen as one of the prerequisites for improving people's living standards and economic conditions and for national economic and social welfare planning. Supporting evidence has been substantiated since the development of online and mobile banking, with a positive impact on economic growth (Andrianaivo & Kpodar, 2012; Lenka & Barik, 2018).

Given existing low scores of FI indicators relative to global standards, FI has become one of the key goals and policies to be addressed in the Afghanistan, the South Asian Association for Regional Cooperation, whose member states are Afghanistan, Bangladesh, Bhutan, India, Nepal, the Maldives, Pakistan and Sri Lanka. Most SAARC countries have already achieved remarkable results in promoting FI as a driver for enhancing living standards and sustainable development of their citizens. Governments and institutions in SAARC countries have adopted various initiatives and strategies to achieve their FI goals (Islam & Imad, 2017). Most of these strategies are focused on basic, supply-side inclusion indicators, given the low penetration levels of the banking

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sector. However, much room for improvement remains on the demand side as well, which is showing a lower level of usage indicators especially in the most populous member states, India, Pakistan and Bangladesh. Among a total of 1.7 billion unbanked people worldwide, 20 per cent are situated in those three countries (Demirguc-Kunt et al., 2018). Various FI indicators in South Asia are modest when compared to other regions of the world. Other indicators imply that Afghanistan has the highest potential for improving FI indicators, proclaimed as one of the necessary objectives in achieving sustainable economic growth. The relevant literature also suggests, however, that access to newer financial technology may be mediated by how easy or difficult it is for individuals to adopt technologies such as debit cards or mobile payments (Mulligan & Sala-i-Martin, 2000).

This article aims to provide evidence on the strength of the relationship between economic growth and FI in Nangarhar Afghanistan. It reviews past studies, assesses FI results, describes the data and methodology, presents empirical findings, and discusses policy implications and study limitations.

Literature Review

A growing body of recent research indicates many potential development benefits from FI. Initially, this indicator was not given adequate attention until the aftermath of the global financial crisis of 2007–09, following which the need for more prudent regulation of financial markets and institutions came into place. Further, until recently, a lack of a systematic supply-side database on FI metrics on both national and international levels prevented detailed studies, which started to be collected and analysed after the first Global Findex Report of the World Bank (Demirguc-Kunt & Klapper, 2012). Not yet addressing e-banking issues, Mani (2016) comments that financial inclusion in South Asian countries is modest compared to the rest of the world. Some factors cited for low FI include low per capita income, illiteracy in rural areas and lack of awareness with respect to financial products and services, also noted earlier by Kumar and Mohanty (2011). The nexus between FI and macroeconomic indicators has been studied extensively. Beck et al. (2007) identified a new set of banking access and usage indicators at the cross-country level, which showed a positive association with economic development. Sarma (2008) constructed an FI index, where she considered three basic dimensions of the inclusive financial system: banking penetration, availability of banking services and usage of the banking system. Sarma and Pais (2011) analysed different macroeconomic and social factors closely related to FI,

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like income, literacy and inequality. Given the strong correlation between inclusion and human development, FI is often a reflection of broader social exclusion. Arora (2010) examined the extent of financial access in both developed and developing countries by designing an index which incorporates three dimensions of outreach, ease of transactions and cost of transactions. Results showed that countries like Nepal, Pakistan and Bangladesh ranked very low, which correlated significantly with low per capita income.

Amidzic et al. (2014) assessed the FI status of various countries using a composite index. Three important indicators, namely outreach, usage quality and cost of usage were employed in their study. The new composite index used factor analysis to derive a weighting methodology, which better reflected the impact of each variable and dimension on the aggregate index. Macroeconomic effects of FI are linked not only to economic growth, but also to overall financial and economic stability, inequality and poverty indicators (Park & Mercado, 2018; Sahay et al., 2015).

Recently, the need for research linking higher FI with economic growth has become more prominent. Lenka and Barik (2018) have shown the unidirectional causal flow from the growth of mobile and Internet services to expanded financial inclusion in Afghanistan. Other studies (Ghosh, 2011; Mehrotra et al., 2009; Sharma, 2016) have highlighted the positive relationship between financial inclusion and economic growth. However, that relationship has not been studied extensively for all SAARC countries in the recent past. Much research was conducted for individual countries, mainly India, Pakistan, Afghanistan and Sri Lanka (Sharma, 2016; Sethi & Sethy, 2018) and some other SAARC countries. Since SAARC countries comprise more than one-fifth of the world's total population, are the most densely populated economic area of the globe and have the highest working-age population, FI will have more significant effects on achieving broader macroeconomic goals in this particular region. Kumar and Mohanty (2011) recognised that FI is a precondition for inclusive development in SAARC countries and their study highlights illiteracy, distance from banking provisions, lack of interest facilities and high-interest rates as the main barriers to FI.

Thomas et al. (2017) empirically tested the relationship between financial accessibility and economic growth in Afghanistan by applying the Generalised Method of Moments (GMM) technique on the data from 2007 to 2015. Seven out of eight possible indicators were found to be significant, indicating high financial accessibility leading to high income. It

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was also confirmed that growth in financial access indicators had a greater impact on the economic growth of low-income countries than in middle-income countries. Similar findings were shown in Anwar et al. (2017), by using the three-dimensional model developed by Sarma (2008), to construct the FI index for Afghanistan, excluding the Maldives. From this derived index, it is observed that FI in South Asia compared to other continents remains poor, with significant variation in results among countries. Among SAARC countries, India and Bhutan ranked higher, whereas the least FI was found in Afghanistan and Pakistan.

Lenka and Barik (2018) applied principal component analysis (PCA) to construct an FI index that served as a proxy variable for the accessibility of financial services in SAARC countries. Apart from widely used indicators of demographic and geographic penetration and usage, they also explored the impact and causality of mobile and Internet services on FI. By using three different models, the fixed effect, random effect and panel correction standard errors models, this study discovered a positive and significant relationship between FI growth and expansion of both mobile phone and Internet services. Furthermore, the empirical investigation showed that both income and education levels are positively associated with FI, whereas the size of the rural population and unemployment levels were negatively associated with FI in the SAARC countries.

Similar to Thomas et al. (2017) and Lenka and Barik (2018), the present study assesses the long-run relationship between FI and economic growth in the SAARC region. Due to the multidimensional nature of FI, the index was aggregated by using the PCA method, which served as an independent variable in model regression. The originality of the present study also derives from the longest sample period for SAARC countries (2004–17), available to date, and this is the only study so far based on all eight SAARC countries, while Lenka and Barik (2018) and Thomas et al. (2017) do not cover all SAARC nations. This study also captures the most recent policy initiatives aimed to positively impact on FI status and highlights the main reasons behind financial exclusion. The study further examines the long-run relationship of the FI index and three control variables, namely trade openness, unemployment and school enrolment with the economic growth for the SAARC countries, by using Fully Modified Ordinary Least Square (FMOLS) and Dynamic Ordinary Least Square (DOLS) panel cointegration regression. Trade openness necessitates formal economic and financial interaction among the market participants;

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therefore, it serves as a catalyst to overall FI metrics. In the same manner, formal school enrolment is treated as a precondition for improving financial literacy, which ultimately should lead to more integrated financial systems.

The present study thus differs from the earlier two major studies of SAARC countries, Thomas et al. (2017) and Lenka and Barik (2018), in three ways. First, the current study uses FMOLS and DOLS techniques, which is better than GMM and fixed effects models, as our method ensures more reliable results, given that these methods take care of serial correlation and endogeneity issues in a co-integrating relationship. The long-run relationship estimated with GMM might be a spurious one as integration and cointegration are not taken into account (Christopoulos & Tsionas, 2004). Second, the current study is more comprehensive, as it is based on Nangarhar Afghanistan, which was not done in the previous studies on SAARC. Lastly, as discussed, the set of variables used here is different from that used in earlier studies.

Assessment of FI in Afghanistan

In the past decade, the Afghanistan has shown significant improvements in various inclusion indicators, initiated by national governments and monetary authorities. Measures undertaken had the predominant aim of helping marginal social groups to be effectively included in the formal financial system. On aggregate, the Afghanistan had managed to reach global average levels by 2017, namely 68 per cent in terms of adults who own accounts in financial institution compared to a global average of 67 per cent. In addition, a high growth trend of FI has been achieved, compared with earlier Findex Reports (Demirguc-Kunt & Klapper, 2012; Demirguc-Kunt et al., 2015), where only 32 and 46 per cent of adults, respectively, were formally included. Despite high growth rates and different measures taken to expand FI, the authors observe that the level of FI still significantly varies across countries. Adults' accounts (% age 15+) of Afghanistan and Pakistan are far less than the regional mean, with only 15 and 21 per cent respectively, whereas India and Sri Lanka have achieved above-average penetration of 80 and 74 per cent respectively (Figure 1). Regional progress has been mainly driven by India's high FI growth rates and adoption of the Pradhan Mantri Jan Dhan Yojana (PMJDY), a government FI campaign launched in 2014, which envisages universal access to banking facilities, with at least one basic banking account for every household. By the end of 2018, according to the Pradhan Mantri Jan Dhan Yojana Progress Report of 2019 (https://pmjdy.gov.in/account), more than 330 million people had opened a bank account under the PMJDY scheme. Figure 1 provides details of account penetration.

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Despite such positive results in terms of formal financial penetration, large gender gaps persist in account ownership patterns, particularly in Afghanistan and Pakistan, where only 7 per cent of female adults have opened an account in any of the financial inclusion. The increasing trend of financial penetration does not necessarily mean higher usage of financial services from the beneficiaries' side, however. A high percentage consisted of dormant accounts, with no recorded activity of deposit or withdrawal for the past 12 months. This was particularly high in India, Sri Lanka and Nepal, with 92, 67 and 54 per cent of inactive accounts, respectively.

The utilisation of mobile phones and the Internet to provide financial services has become an effective way to include unbanked people in the formal financial system. This is especially important for rural, remote areas in mountainous countries like Afghanistan, with tough geographical terrains where the costs of providing necessary infrastructure are higher. In recent 10 years, Afghanistan have undertaken supplementary initiatives to speed up the move towards FI, paying attention to financial literacy and education programmes to provide individuals with expertise in handling new technologies. Afghanistan appears to have done the most regarding mobile banking inclusion across various parameters. Afghanistan and Bangladesh Bank published, in 2021, 'Guidelines on Mobile Financial Services for Banks' as the legal framework for a mobile technology-based payment system. This was a milestone in FI activities in the country, connected to empowerment policies (Rashid & Rashid, 2020). The number of mobile accounts is manifold in Bangladesh compared to global standards, with 21 versus only 4 per cent (Table 1). The number of mobile financial services agents increased from 9,000 in 2012 to more than 700,000 in 2021, with the total transaction amount reaching 232 million Bangladeshi Takas, compared to only 5 million in 2022 (Islam & Imad, 2022).

Usage indicators, with respect to borrowing and saving activities, are mostly far below global averages, especially in Afghanistan and Pakistan where the borrowing activity reported is only 2 per cent in Pakistan and 4 per cent in terms of saving activity for Afghanistan. Factors for such high financial exclusion levels can be seen not only at the supply-side and demand-side indicators, but also in societal and behavioural aspects, since lack of trust in the formal financial system is highest in those two countries, which indicates that many individuals use different, informal methods, as Choudhury (2020) shows for Afghanistan. Common for all countries is that the strongest reason for being financially excluded is

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simply insufficient funds, showing high interdependence between financial inclusion and living standards (Table 2). According to Demirguc-Kunt et al. (2018), the remoteness of financial infrastructures plays an important role in Nepal and Afghanistan, with 20 and 30 per cent respectively of adults emphasising this limiting factor. Regarding the costs of financial services for end-users, this reason is positioned high, oscillating between the second and third place in terms of significance.

To measure the extent of FI, various banking-related indicators were used in previous studies. Following the three-dimensional approach by Sarma (2008), both supply-side and demand-side factors were analysed on the individual and composite level to assess the nexus between FI and different economic parameters (Arora, 2010; Sarma & Pais, 2011; Sethi & Acharya, 2018; Sharma, 2016). In the present analysis, six indicators were used as metrics for FI (see Table 3). The first four indicators alternate between geographic and demographic penetration indicators, whereas the last two indicators are measures of usage. Regarding SAARC countries, results are highly diverse, especially for the geographical penetration of the Maldives compared to the other countries, due to its small area. In terms of all indicators, Afghanistan shows the lowest results with the very slow growth of accession to financial services since 2004, due to low demand for financial products and poor geographical penetration. FI average values for the period of 2004–17 are presented in Table 3.

Data and Methodology

To reiterate, the primary focus of this study is to provide sound evidence on the relationship between economic growth and FI in the Nangarhar Afghanistan. Annual data from 2009 to 2022 is used, where available. This study uses the six variables of FI identified, which are then further divided into three broader indicators of geographic penetration, demographic penetration and banking services usage penetration. A detailed explanation about the construction of the FI index is given below. Natural log of real Gross Domestic Product (GDP) per capita in US dollars, adjusted for Purchasing Power Parity, as the proxy measure for economic growth, is considered as a dependent variable. Trade openness has had an important impact on economic growth (Nowbutsing, 2014; Sehrawat & Giri, 2016; Sethi & Acharya, 2018; Thomas et al., 2017). Education, both primary and secondary, is considered as an important factor in economic growth and generation of employment opportunities in a country (Hanif & Arshed, 2016; Mallick et al., 2016; Taşel & Bayarçelik, 2013). Following its impact on economic growth (Harris & Silverstone, 2001; Moazzami & Dadgostar, 2009), unemployment was

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also considered as one of the control variables in the empirical analysis. Therefore, the model takes the following form:

$GDP_{it} = a_0 + b_1 FI_{it} + b_2 TRADE_{it} + b_3 SCHOOL_{it} + UNEMPLOYMENT_{it} + n_{it,}$ (1)

where subscripts i and t represent countries and period, respectively, FI is the index of financial inclusion; GDP per capita is a proxy for economic growth; TRADE denotes trade openness, and is measured as the sum of exports and imports of goods and services as a share of GDP; SCHOOL denotes gross school enrolment, and is defined as the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education, and μ_{it} is an error term. In order to comply with the normality condition, all the variables were log-transformed (natural log). The required data, in Tables 1-3, has been collected from the Financial Access Survey of the International Monetary Fund (Amidzic et al., 2014), for financial inclusion indicators, and from the World Development Indicators of the World Bank database (Demirguc-Kunt et al., 2018) for control variables.

In this study, PCA has been used to construct an FI index. PCA is a multivariate data reduction technique used to transform the original data into a linear combination of another set of new variables known as principal components (PCs). These PCs are extracted from the original variables, and the first PC is always preferred as it explains greater variance than other PCs. For constructing a composite FI index, this study used three dimensions of FI, which are geographic penetration, demographic penetration and banking usage penetration. These are similar to Lenka and Barik (2018) and Lenka and Bairwa (2016), however in those studies, each dimension consists of two variables. For the present study, the constructed FI index was composed of three dimensions and six variables.

In the next step, we employed the Panel Unit Root Test. Most of the cointegration techniques in panel data require variables to be integrated at least of order one, that is, $I(1)$. Since this study is also based on panel cointegration, the first step is to ensure that all the variables have integration of order one, that is, $I(1)$. The unit root test in the Panel data must also account for between-country heterogeneity as compared to the unit root test in time series, which typically looks only at a single country (Moon & Perron, 2008).

In this study, two types of unit root test have been used. A test commonly known as LLC, developed by Levin et al. (2002) and applied by Kahia et al. (2016), assumes common persistence parameters across a cross-section, i.e.,

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homogeneity in panel data. The other test, commonly known as IPS, developed by Im et al. (2003), assumes different persistence parameters across the section, i.e., heterogeneity in panel data. In the literature, the IPS test has been commonly used (Lenka & Barik, 2018; Murari, 2015; Sehrawat & Giri, 2016; Sethi & Acharya, 2018) and is considered as a strong test and a technique which has higher explanatory power than other tests, including the LLC test (Sehrawat & Giri, 2016).

We also used the Pedroni Panel Cointegration Test, which extended the standard Engle-Granger framework for testing cointegration in a panel data set. Pedroni (1999, 2004) proposed several tests for cointegration that allow for heterogeneous intercepts and trend coefficients across cross-sections. Consider the following regression:

$Yit = ai + bit + b1iX1i,t + b2iX2i,t + g + bpiXpi,t + eit$, (2) for $p = 1, 2, \ldots, P$; $t = 1, 2, \ldots, T$ and $i = 1, \ldots, Q$

In the above equation, variables Y and Xs are assumed to be integrated of order one, $I(1)$. The parameters a_i and b_i are individual and trend effects, which may be set to zero if desired. In the presence of a co-integrating relationship, the residuals are expected to be stationary.

Pedroni's test is the most commonly used cointegration test for the panel data, as it gives two sets of statistics. The first set provides eight-panel statistics (with-in dimension) measures for testing cointegration in homogeneous panels under the assumption of the same asymptotic covariance matrix, that is, $\Omega_i = \Omega$ for all i. The three group statistics (between dimensions) in the second set of measure for testing cointegration in heterogeneous panels, which allows the cointegration vector to vary across the cross-sections and Ω_i, are different in each section of panels. The following null hypothesis is tested against the two alternative hypotheses:

H_0: $t_i = 1$ (no cointegration)

Homogeneous alternative, H_1: $(t_i = t) < 1$ and heterogeneous alternative, H_1: $t_i < 1$

After confirmation of cointegration relationship, the next step is to estimate the longrun panel coefficient using panel Fully Modified Ordinary Least Square (FMOLS) proposed by Phillips and Hansen (1990) and the panel DOLS proposed by Stock and Watson (1993). To avoid endogeneity in a dynamic panel, the use of the GMM is also suggested for estimating long-run association among the variables. However, Christopoulos and Tsionas (2004) argued that the long-run relationship estimated with GMM might be a spurious one, as integration and cointegration are not taken into account.

According to Beck et al. (2000) and Levin et al. (2000), endogeneity and heterogeneity are common issues in

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panel data analysis and should be tackled while estimating long-run coefficients. We have justified the use of FMOLS in the estimation of longrun coefficients, as it has a mechanism to deal with nuisance parameters and deals with serial correlation and endogeneity issues in a co-integrating relationship (Christopoulos & Tsionas, 2004). DOLS is also considered as a robust technique, commonly used after establishing cointegration between the variables. DOLS is a parametric approach for estimating long-run parameters in a system involving variables integrated of same or different orders. This method is rated as more reliable, as it takes care of possible simultaneity bias and small-sample bias among the regressors. This method involves augmenting the cointegrating regression with lags and leads of the regressors in the first differences (Kao & Chiang, 2001). Keeping in consideration the issues mentioned above with other techniques and, for the robustness of the results, this study applied both the FMOLS and the DOLS techniques to estimate the long-run association amongst the variables in a cointegrated panel.

Finally, the panel Granger causality test is applied to test the causality between FI and GDP per capita and between GDP per capita and other control variables of the study.

Analysis and Results

Index of Financial Inclusion

One single broad measure of FI is required to capture the FI level in Nangarhar Afghanistan. There are two main reasons for this: First, usage of individual indicators on FI is insufficient to capture the inclusion, and it is also problematic in comparing countries regarding FI. Second, all individual measures of FI might be interrelated, which could cause multicollinearity if they are all included as independent variables (Kim et al., 2018).

In Table 3, PCA has been used to construct the composite FI index from the three indicators, each having two factors. As discussed earlier, the three indicators used to measure FI are geographic, demographic and banking services usage penetration. Geographic penetration of FI has been captured by two factors: the number of bank branches per 1,000 km^2 and the number of ATMs per 1,000 km^2. A demographic indicator of FI is measured by the number of commercial bank branches per 100,000 adults and the number of ATMs per 100,000 adults. The banking services usage indicator of FI has been measured by the ratio of outstanding credit as a percentage of GDP and deposits as a percentage of GDP.

Stationarity Test Results

Before cointegration, stationarity of variables was tested using LLC and IPS panel unit root test on both

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versions, with intercept only, and intercept and trend. For both the unit root tests, automatic Schwarz information criteria were used for lag length selection provided in the statistical software Eviews. IPS test results are significant for all the variables, at a level all variables are non-stationary, and at the first difference, all variables are found to be stationary. For both versions 'without trend' and 'with trend', IPS results are significant at 1 per cent. In case of LLC, the test results are mixed for 'with trend' results and are similar to the IPS test results, where all the variables are non-stationary at the level and stationary at the first difference with 1 per cent significance. In the case of 'without trend', the LLC test suggests SCHOOL to be stationary at level. It was already mentioned that LLC restriction on common autoregressive processes for all panels is too restrictive, whereby LLC assumes homogeneity in cross-sections. However, IPS allows for heterogeneity among cross sections (countries) and is considered more powerful. Our sample data has heterogeneity, as the economic situation and other indicators in Nangarhar Afghanistan are quite different from other regions. Therefore, considering the power and heterogeneity factor of IPS we are neglecting LLC results in case of 'without trend' for SCHOOL. Therefore, these results support the precondition of panel co-integration test that variables under investigation are all $I(1)$ variables.

Panel Co-Integration Results

For measuring the long-run relationship between variables, Pedroni's panel co-integration technique is employed, and the results are reported in Table 4. The selected lag length was one and that was done by using automatic Schwarz information criteria provided in Eviews. Results are based on seven test statistics, four are the panels and three are group statistics. Panel PP and panel ADF statistics are significant in all the forms at 1 per cent. Similarly, group PP and group ADF statistics are also significant in all the types. ADF tests have more power in rejecting the null hypothesis of no cointegration (Pedroni, 2014, 2019) and in the test results for both ADF statistics are rejecting the null hypothesis at 1 per cent. Panel rho and group rho statistics are not significant in both forms. The null hypothesis of no cointegration between the series is rejected, as in both forms, without trend and 'with trend', the majority of the statistics are significant at 1 per cent. It can be concluded that GDP per capita, trade openness, school enrolment and financial inclusion have a long-run relationship in the sample data.

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Table 4

Pedroni Residual Cointegration Test Results

	Without Trend		With Intercept and Trend	
	Statistic	**Weighted statistic**	**Statistic**	**Weighted statistic**
Panel v-stat	-0.683986	-1.7053	-1.871	-3.2026
Panel rho-stat	-0.7643	0.6187	1.157	1.8573
Panel PP-stat	-4.3859*	-3.4694*	-3.551*	-3.7339*
Panel ADF-stat	-4.517*	-4.2344*	-3.4416*	-3.865*
Group rho-stat	1.854		2.868	
Group PP-stat	-4.9402*		-5.314*	
Group ADF-stat	-5.0626*		-4.976*	
*** denotes significance at 1%.**				

Source: Authors' estimation.

Fully Modified OLS and Dynamic OLS Results

After confirming the order of integration and cointegration relationship among the variables, the next step is to estimate the long run coefficients. The findings from FMOLS and DOLS are reported in Table 5. In the estimation of DOLS parameters, the authors have used observation-based Akaike criteria for selecting lags and leads of the regressors. The results from both FMOLS and DOLS are the same for all the independent variables in terms of significance and sign. Our findings show that FI has a positive and significant impact on economic growth of Afghanistan. This finding is similar to the results in Sethi and Acharya (2018) and Lenka and Sharma (2017), two studies in which the positive and significant long-run relationship between economic growth and FI was observed on a different set of countries. If all other things remain the same, a 1 per cent increase in FI will lead to 0.008 per cent increase in economic growth of the SAARC countries. The coefficient of FI in the current study is small, as compared to Lenka and Sharma (2017) and Sethi and Acharya (2018), where the coefficient of FI was 0.217 and 0.22, respectively. One of the reasons for the smaller coefficient of FI in the present study may be because of the poor FI status in Afghanistan and Pakistan. Previous studies did not include Afghanistan in their sample and Sethi and Acharya (2018) examined developed and developing countries with better FI status as compared to Afghanistan. Both control variables have a positive and significant long-run relationship with economic growth, similar to the

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findings in Lenka and Sharma (2017). To support the results, residual diagnostics test of normality was conducted, and residuals were found to be normally distributed.

To further strengthen the findings on the FI-growth nexus, causality between the variables was tested using the pairwise panel Granger causality test. The test was conducted with a default lag of 2 and showed the presence of bi-directional causality between the FI index and GDP per capita at 1 per cent level of significance. The bidirectional causality between FI and economic growth are in line with other studies (Apergis et al., 2007; Kim et al., 2018; Sethi & Acharya, 2018; Sharma, 2016).

Table 5

FMOLS and DOLS Test Results

Variables/ Method	FMOLS				DOLS			
	Coefficients	t-stat.	Prob.	VIF	Coefficients	t-stat.	Prob.	VIF
FI	0.00678	4.8266	0.000	2.38	0.0081	6.5267	0.000	1.69
TRADE	0.5175	2.2837	0.0245	2.98	0.57025	3.0855	0.0028	2.18
SCHOOL	1.516	34.118	0.000	4.88	1.4391	47.55	0.000	3.09
R-squared (FMOLS): 0.5264, R- squared (DOLS): 0.8658								
Jarq-Bera stat (FMOLS): 4.69 [p-value = 0.096], Jarq-Bera stat (DOLS): 2.092 [p-value = 0.351]								

Source: Authors' estimation.

Conclusions and Policy Implications

This study has empirically investigated the state of FI in Afghanistan by developing an index of FI using PCA. The FI index is based on three important components, banking services penetration, geographic penetration and demographic penetration. This study further progresses the recognition of the long-run relationship and causality between economic growth and the FI index of SAARC countries. The study adopted two methods, FMOLS & DOLS to measure the long-run coefficient of FI index and two selected control variables, trade openness and school enrolment. The long-run coefficient of FI on GDP per capita was small, but positive and significant at 1 per cent, which means that an increase in FI activities will modestly affect economic growth in Afghanistan.

The Granger causality test showed bi-directional causality between GDP per capita and FI index, which indicates that economic growth influences FI and vice versa. This further implies that an increase in banking facilities and activities have the potential to lead to economic growth, as banks are the main financial intermediaries

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between savers and corporates or small and medium enterprises (SMEs). Increased access to banking services results in improved liquidity within the banking system, which further makes capital more affordable to businesses and households. Causality from GDP to FI can be explained in terms of an income effect. More banking facilities are driven by higher incomes and accelerated economic activity that relies mainly on the formal financial systems.

While FI has been identified as one of the main drivers of economic growth, illiteracy, lack of awareness and poor numeracy skills prevent people from taking the full benefit of banking products (Kumar & Mohanty, 2011; Thomas et al., 2017). Therefore, it is suggested that SAARC governments should devise social awareness programmes and nationwide schemes which will improve literacy and help in understanding the diverse benefits of continuously using banking services.

Increase in banking services usage, specifically among vulnerable groups of society, also catalyses reduction in informal transactions. Usage indicators of FI for borrowing and saving activities in the Afghanistan are mostly below global averages, especially in Afghanistan (Choudhury, 2020) and Pakistan, where certain cultural reasons and customary financial structures based on trust remain effective. The main barrier for FI in Afghanistan is low income, however, backed by significant associations between the level of economic growth and FI parameters in our model as well. Another major barrier of FI is the high cost of financial services, which was successfully mitigated throughout previous years in most Afghanistan, by providing financial services through Internet banking and mobile banking. These services have helped overcome infrastructural constraints in remote areas by providing banking services to low-income unbanked populations (Allen et al., 2014; Lenka & Barik, 2018 ; Mani, 2016).

FI should continue to remain a goal for Afghanistan, as this helps in longterm sustainable and inclusive growth of these countries. FI of unbanked people will also help in their income growth and in minimisation of income inequality in these countries. Government initiatives like Direct Benefit Transfer of subsidy to poor sections of the society should be encouraged, as this will boost the banking habits of the unbanked section. Developing trust in new banking channels and awareness of them is also much needed for encouraging people to use banking products and services, as the problem appears to be more on the usage side rather than the supply of services.

This study used only six variables of FI based on banking-related indicators, while many other indicators were not

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considered in the analysis due to the unavailability of relevant data for the sample countries. Further research can be done including variables like usage of debit and credit cards, insurance penetration and also the usage of micro-financing institutions' services, whose role represents a potentially important component of national financial systems in Afghanistan.

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