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AUTHORS: Shabeer KHAN,Hakan ASLAN,Ayan OMER

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THE IMPACT OF FOREIGN DIRECT INVESTMENT ON FINANCIAL INCLUSION: AN EMPIRICAL INVESTIGATION

Shabeer KHAN[1]

Hakan ASLAN[2]

Ayan OMER[3]

Abstract

Many studies discuss the result of foreign direct investment on the financial development and economic growth of different countries, but the FDI's effect on financial inclusion is considered understudied and not yet subjected to proper empirical evaluation. Therefore, this paper empirically examines the impact of foreign direct investment (FDI) on financial inclusion corresponding to its different quantiles for a maximum sample of 99 countries over the period 2005- 2016 by using the non-parametric analysis, namely the non-parametric quantile regression approach with Markov Chain Monte Carlo (MCMC) optimization that allows examining the impact of FDI on financial inclusion at a different level of financial inclusion. The results suggest that the impact of FDI on financial inclusion varies across countries based on the level of financial inclusion. Specifically, the FDI has a positive and statistically significant association with financial inclusion in all quantiles indicating that FDI does increase financial inclusion regardless of having low, medium, or high levels of financial inclusion. The study recommends that decision-makers need to consider FDI while developing policies for the improvement of financial inclusion.

Keywords: Panel Quantile Regression**, Financial Inclusion, Foreign Direct Investment, (MCMC) Optimization Approach.

JEL Codes: C31, C33, F47, G29

[1]Asst. Prof. Dr., Sakarya University, Department of Islamic Economics and Finance, shabeer@sakarya.edu.tr, ORCID: 0000-0003-4739-6543.
[2]Asst. Prof. Dr., Sakarya University, Department of Islamic Economics and Finance, hakanaslan@sakarya.edu.tr, ORCID: 0000-0003-2923-6837.
[3]Masters' Student, Sakarya University, Department of Islamic Economics and Finance, ayan.omer@ogr.sakarya.edu.tr, ORCID: 0000-0002-0953-5461

DOĞRUDAN YABANCI YATIRIMLARIN FİNANSAL KAPSAYICILIK ÜZERİNE ETKİSİ ÜZERİNE AMPİRİK BİR ARAŞTIRMA

Öz

Literatürde birçok çalışma, doğrudan yabancı yatırımın (DYY) farklı ülkelerin finansal gelişimi ve ekonomik büyümesi üzerindeki sonuçlarını ele almaktadır. Ancak DYY'nin finansal kapsayıcılık üzerindeki etkisinin yeterince çalışılmadığı ve henüz uygun bir ampirik çalışmada yer almadığı kabul edilmektedir. Bu nedenle, bu çalışmada doğrudan yabancı yatırımın (DYY) farklı kantillerine karşılık gelen finansal erişim üzerindeki etkisini, 2005-2016 döneminde maksimum 99 ülke için parametrik olmayan analiz yöntemi olan kantil regresyon analiz yöntemini Markov Zinciri Monte Carlo (MCMC) optimizasyonu ile kullanarak ampirik olarak araştırmaktadır. Bulgular, DYY'nin finansal içerme üzerindeki etkisinin, finansal içerme düzeyine bağlı olarak ülkeler arasında değişiklik gösterdiğini göstermektedir. Spesifik olarak, DYY'nin finansal kapsayıcılık ile tüm kantillerde pozitif ve istatistiksel olarak anlamlı bir ilişkisi olduğu tespit edilmiştir. Bu da DYY'nin düşük, orta veya yüksek düzeyde finansal kapsayıcılık olmasına bakılmaksızın finansal kapsayıcılığı arttırdığını göstermektedir. Çalışma, karar vericilerin finansal katılımın iyileştirilmesine yönelik politikalar geliştirirken DYY'ı dikkate almaları gerektiğini önermektedir.

Anahtar Kelimeler: Panel Kantil Regresyon, Finansal Kapsayıcılık, Doğrudan Yabancı Yatırımları, MCMC Optimizasyon Yaklaşımı

Jel Kodları: C31, C33, F47, G29

INTRODUCTION

The banking system is a crucial segment that participates in the development and growth of the economy. Due to globalization, all economies of the world are getting connected to each other. Foreign direct investment (FDI) has become an important condition for the economic development of both developed and developing countries. According to International Monetary Fund (IMF) and Organization for Economic Cooperation and Development (OECD), the foreign direction has been outlined as multinational investment made by an entity in one nation through controlling business ownership to get long-term mutual advantages within another country (OECD, 2008).

World Bank (2011) mentions that in the period of globalization that turned the world into one small international town, foreign direct investment was examined as one of the major factors that significantly contributed to the country's economic growth. So, to get a possible advantage from foreign direct investment inflow, many countries like China, India, and Russia offer policies such as lowering taxation, reducing the labor price, and well-advised infrastructure to attract foreign investment inflows.

As mentioned before, FDI inflow is an important factor for economic growth, and many countries try to attract it. The advantage of foreign direct investment might be by way of information and technology overflow, job creation, and business development. Moreover, FDI can solve problems commonly faced by the banking industry, such as financial product shortage and inefficient management, and create more effective risk management tools and financial product development (OECD, 2002; Magnus et al., 2008).

According to Alfaro (2003), foreign direct investment is not only a source of capital supply but also a source of transferring useful technology and know-how to the host countries through promoting connection with local countries' enterprises. If transferred technology is used in the financial sector, it can act as an instrument to improve a platform that helps to broaden the financial services in access areas. Also, technology helps banks decrease their cost to increase the reachability of the financial service to customers, which increases the financial inclusion of the banks. Sarma (2008) highlights those three essential aspects of financial inclusion access, use, and quality so; as the technology transfer through FDI increases accessibility and provides financial services at a low cost to the unbanked and poor people of the country, including educating and encouraging them towards financial services.

The main purpose of this paper is to examine the effect of FDI on the financial inclusion of the banking sector. Therefore, this study's main contributions are as follows: (1) Since the impact of FDI on financial inclusion is considered understudied and not yet subjected to proper empirical evaluation, this study plans to close the gap by investigating the effect of FDI on financial inclusion using the non-parametric panel quantile regression approach, which can provide higher estimation results from studying and analyzing the relationship between FDI and financial inclusion. (2) Also, the results of this study are to release appropriate policy responses for governments and policymakers of the countries, which allow decision-makers and implementers to have better information on how to position their FDI to enhance their financial inclusion level.

The organization of the paper is structured as follows: Section one discusses the literature review to highlight current studies and the literature gap. Section two establishes the research methodology: data, estimating model, and explains its econometric methodology used in the paper. Section four outlines the study results and discussion. Finally, the paper concludes with section five by providing the conclusion and recommendation.

1. LITERATURE REVIEW

FDI allows countries to obtain capital and increase their economic competitiveness, making it vital in their long-run economic development. Blomström et al. (2000) stated that FDI has, directly and indirectly, participated in host economies' economic growth. Moreover, it directly contributes to employment, capital and exports, and new technology in the host country. Foreign investment is more likely to flow from developed nations to less developed ones; as the developing countries, much needed to the benefit that comes from the FDI, like transferring important technology, creating jobs, and improving the infrastructure, so they create institutions to promote their FDI.

IMF et al. (1991) and Meyer (2001) discuss that FDI supplies an important source of investment funds for the public and private sectors, contributing to managerial skills, new technology, and capital and promoting competition. The financial sector is always the key sector for the overall development of any country, and the banking sector is the primary sector among all. Oteng-Ababio et al. (2016) investigated the effect of FDI on the banking sector performance using some selected banks in Ghana. The study confirmed a positive and significant correlation between FDI, banks' capital base and the liquidity of the selected banks in Ghana. In addition, Baladevi et al.(2019) evaluate the impact of financial inclusion on the banking sector in India. The study found that FDI has solved the banking sector's problems, like risk management, low capitalization, and stability problems. Also, it mentions that FDI has a buoyant impact on the banking sector through technology transfer, financial soundness, innovative products, and employment.

Financial inclusion is the share that individuals and firms use from financial services. Sarma (2008) also defined financial inclusion as the ability to reach financial services by all adult members of society in the economy. Financial inclusion has multiple aspects, such as securities markets, saving accounts and credit, insurance, payment, and pension. In order to measure the inclusion of financial services will be through the financial inclusion index, which are total ATMs per hundred thousand adults, bank branches per hundred thousand adults, deposit accounts per hundred thousand adults, and the total number of customers that borrow from banks per hundred thousand adults (Odugbesan et al., 2020). Financial inclusion has a strong relationship with the welfare of the economic system; some previous studies state that financial system development, including financial inclusion development and economic growth, is directly related in the long term. Demirguc-kent et al. (2008) refer that financial

inclusion increases poor people's ability to reach financial services, which allows them to get funding to increase their business and, at the same time, decrease income inequality and poverty.

Zins and Weill (2016) analyzed the drivers for financial inclusion in 37 African countries, and they discovered that people with higher education and income had greater access to financial institutions. When compared to women, men are more advantageous for financial inclusion. Anyangwe et. Al. (2022) studied the importance of culture as a factor influencing financial inclusion by evaluating 50 developing and 35 developed countries. They indicate that customization is required when a country's financial inclusion policies are recommended. Chipunza and Fanta (2022) 's study focuses on financial inclusion from the South African context. They indicate the importance of customization for policies based on the socio-demographic status of the people to increase financial inclusion. Motta and Farias (2002) also found similar results to Zins and Weill (2016), arguing that higher income and education levels are related to a greater likelihood of financial inclusion. Most studies focus on the determinant of financial inclusion from different aspects and countries.

FDI can increase financial inclusion through the channel of increasing the availability of funds for financial institutions, thus allowing them to expend their funds to the unbanked and deprived class of society. Similarly, adding new technology and knowledge into the economy thus helps the financial institutions improve the quality of services and develop fin-tech based financial products to bring in those who do not have excess financial facilities. Additionally, the funds coming through FDI to the economy can be utilized for investment purposes, and thus more investment leads to more jobs and thus, new employees people may open a bank account and can ask for additional funds from financial institutions (Shihadeh & Liu, 2019; Efobi et al.,2014; Zaman et al., 2012).

Banking services and technology are the main components to ensure financial inclusion is efficiently performed in any country. Since technology can reach unbanked people in the country, using technology with financial services can cause a long-lasting and inclusive economic system. Some of the recently used technologies in the banking sector are eKYC (Electronically Know Your Customer), IMPS (Immediate Payment System), AEPS (Aadhaar Enabled Payment System), and Mobile Banking (Singh, 2017). Hence foreign direct investment is one way to transfer essential and advanced technology from one country to another. Using that technology effectively could reduce the cost of reaching the unbanked community. Also, it could change the usefulness and quickness of the services.

2. RESEARCH METHODOLOGY

2.1. Data

This paper applies panel data for 99 countries from 2005 to 2016. The selection of the countries and time depends on the data availability, significantly of the dependent variable. The data source used for this study is the Datastream and Worldbank DataBank.

Financial inclusion has been chosen as the dependent variable in this study to fulfill the goal of this paper, which is the empirical analysis of the effect that FDI has on financial inclusion. Since financial inclusion is multidimensional, it cannot be measured by a single indicator (Sarma, 2008). So it can be measured by the total number of ATMs, commercial bank branches, commercial bank borrowers, commercial banks' deposit accounts, and depositors per 1,000 adults. The proxy for financial inclusion is bank branches per adult (bbadlt), where the study's independent variable is FDI, also by controlling bank-specific variables. Macroeconomic and freedom factors are important to understand the impact of FDI on financial inclusion.

The controlled independent variable of this study is the bank-related variable: LOGLOANS. At the same time, the country-specific macroeconomic control variables used in the study are GDP, IMPORT, INFLATION, and EXCHANGE RATE. There is different freedom variable like economic freedom, financial freedom, business freedom, and trade freedom. From the freedom variable study, use BF, which represents BUSINESS FREEDOM. The definitions for the data shown at Table 1.

Table 1. Variables

Variables	Definition
LONGLOANS	The logarithm of the net loans provided by banks
GDP	Gross Domestic Product
IMPORT	Total import volume
INFLATION	Inflation rate
ER	Exchange rate
BF	BF is the efficiency of government regulation of business
FDI	Foreign direct investment
BBADLT	Bank branches per adult

2.2. Estimating Model

The most existing literature investigating the association between FDI and financial inclusion for panel data has applied models like random effect, fixed effect, and Generalized Method of Moments (GMM). However, all these studies' empirical investigations used only a parametric

approach. Although as stated by Asmare and Begashaw (2018), using the parametric approach can be sufficient for modeling data with measurement errors. Nevertheless, still, it is insufficient to robust the estimation results. Moreover, the reason mentioned by (Ullah, 1989; Hettmansperger and McKean, 2011; Jureckova et al., 2012; Asmare and Begashaw, 2018) that using the parametric approach could cause misleading results by assuming that errors in the empirical models compatible with certain parametric distributions.

Thus, this paper is closing the research gap by using a non-parametric panel quantile regression approach as a robust following the study of Powell (2014) to find the impact of FDI on financial inclusion. Moreover, to be robust and non-parametric, the study takes a new approach stated in Powell (2017), which utilizes panel quantile regression with the Markov Chain Monte Carlo (MCMC) optimization. Ledhem and Mekidiche (2021) argue that in empirical analysis, the fundamental problem is the application of appropriate control variables in the model. So, the control variable used in the study is bank related variable: LOGLOANS, and the possible macroeconomic factors (GDP, IMPORT, INFLATION, and EXCHANGE RATE), which are used to remove the bias problem through following previous empirical studies related to the subject. Consequently, the general model for examining the relationship between financial inclusion and FDI is as follows (Equation 1)

$$FI_{it} = FDI_{it} + LOGLOANS_{it} + IM_{it} + GDP_{it} + CPI_{it} + EX_{it} + BF_{it} \quad \textbf{(1)}$$

where financial inclusion FI is a dependent variable, FDI is the independent variable, and (LOGLOAN, IM, GDP, CPI, EX and BF) are the control variables. *i* denotes a country, and where *t* denotes time.

2.3. Econometric Methodology

As stated before, the quantile regression model used in this study provides a more comprehensive statistical analysis opportunity than the traditional mean regression model (Huang et al. (2017). The quantile regression quantifies the explanatory variables' relationship to the dependent variable's conditional quantity without assuming a particular conditional distribution (Waldmann, 2018). The model allows for analyzing different data distribution features while accounting for possible unobserved heterogeneity (Ponomareva, 2010). Also, it enables examining a range of conditional quantiles, handling various forms of conditional heterogeneity, and controlling for the unobserved individual effects (Xue, W., & Zhang, L., 2019).

Powell (2014) described the quantile regression panel data as the non-parametric approach for panel data estimation over a certain length of time. Which is also clearly explained as the ensuing:

$$Y_{it=} D'_{it} \beta(U^*_{it}), U^*_{it} \sim U(0,1) \qquad (2)$$

where, $D'_{it}, D'_{it}\beta(\tau)$ represented by the treatment variable set, which refers to strictly increasing the amount of the conditional distribution quantile (τ) and Y_{it} is financial inclusion i for a country at time t. U^*_{it} it stands for the independent variable, which is foreign direct investment (FDI) and the control variables (LOGLOANS, GDP, IMPORT, INFLATION and EXCHANGE RATE), while β refers to the coefficients. As indicated in the research by Powell (2014), quantile treatments (QTEs) denote the variation causal impact of treatment variables from d_1 to d_2 on Y_{it} at τ constant as the following:

$$d'_2\beta(\tau) - d'_1\beta(\tau) \qquad (3)$$

The quantile regression panel data estimator estimating the properties of the quantile treatment for the dependent variable Y is constructed using a designation identical to that of Chernozhukov and Hansen (2008). as a resul,t this designation requires a structural quantile function for Equation (2) as follows:

$$S_Y(T/d) = d'\beta(\tau), \tau \in (0,1) \qquad (4)$$

as (Powell, 2014) mentioned in his research That the structural quantile function indicated the τth subjunctive quantile of dependent variable Y for stated d. in that case, the QRPD depends upon the conditional restriction as shown by allowing $D_i = (D_{i1}, \ldots, D_{iT})$:

$$P(Y_{it} \le D'_{it}\beta(\tau)/D_{it}) = \tau \qquad (5)$$

As indicated by Powell (2014), this condition states that the possibility of the Y dependent variable being smaller than the quantile function is the same for all Dit and equivalent to τ. The quantile regression panel data permits this probability to differ through the individual and even within-individual, given that this variation is orthogonal to the instruments. Since the same individual can show many times within the panel data, this additional information may be wont to understand the probability of an individual having a little value of the dependent variable wherever their experimental variable might not be τ. Therefore, rather than the

quantile regression panel data related to the conditional restriction and an unconditional restriction by permitting $D_i = (D_{i1}, \ldots, D_{iT})$:

$$P(Y_{it} \leq (D'_{it}\beta(\tau) / (D_{it}) = P(Y_{is} \leq D'_{is}\beta(\tau)/D_{it}) \quad \textbf{(6)}$$

$$P(Y_{it} \leq D'_{it}\beta(\tau)/D_{it}) = \tau \quad \textbf{(7)}$$

be guided by (Powell, 2014) research Equation (7) shows that the possibility of Y dependent variable is smaller than the quantile function that is equal to the τth quantile; however, the quantile regression panel data estimator again confirms the heterogeneity throughout individuals. Lastly, Koenker and Bassett (1978) and Koenker (2004) in order to get an estimation of the conditional quantile function of the dependent variable Y, point out the quantile regression with given W under the deviation loss of asymmetric least absolute, that the τth conditional quantile specified W could be a downside solved because the follows:

$$Q_Y(\tau/w) = argmin_{f \in F} E[p_\tau(Y - f(w))] \quad \textbf{(8)}$$

According to (Chernozhukov and Hansen, 2008) Ƒ stand for the computable functions class of W, while $\tau = 1/2$, $Q(0.5/w)$ is a median Laplace regression function that provides a solution to the problem $P_\tau(u) = 1/2 |u|$. Therefore, the estimated quantile regression model in this study is as follows:

$$FI_t = a_{\tau1}FDI_t + a_{\tau2}LOGLOANS_t + a_{\tau3}IM_t + a_{\tau4}GDP + a_{\tau5}CPI_t + a_{\tau6}EX_t + a_{\tau7}BF_t, \tau$$
$$\in (0,1) \quad \textbf{(9)}$$

whilst $(a_{\tau1}, a_{\tau2}, a_{\tau3}, a_{\tau4}, a_{\tau5}, a_{\tau6}, a_{\tau7})$ stand for coefficients, τ for the quantile, t for year quarter, where the FI is a dependent variable, FDI is the independent variable and LOGLOAN, IM, GDP, CPI, EX and BF are the control variables in the estimation equation. Since the study sample is small (378 observations) This paper Follows Powell (2017), to get a robust estimated result; moreover, this paper has applied the quantile regression panel data with Markov chain Monte Carlo (MCMC) optimization by Chernozhukov and Hong (2003), with an optimization simulation process of 1,000 iterations performed to estimate the quantile regression panel data QRPD.

3. RESULTS AND DISCUSSION

3.1. Descriptive Statistics

Descriptive statistics in Table 2 are presented for all the examined variables in the estimation equation of the study. The table results indicate that the mean of FDI is 6.545 and different significantly over the countries with the max= 451.716 and min = -58.323. Also, the average financial inclusion is 18.276 across the nations, with a standard deviation of 20.446. In addition, import, lognetloans, Gross domestic product, inflation, and exchange rate show a mean of 47.743,6.571,3.797, 6.011, and 99.973, respectively, while business freedom is 65.53.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Bbadlt	1471	18.276	20.446	.24	257.7
Fdi	1539	6.545	21.133	-58.323	451.716
Import	1540	47.743	27.609	0	221.01
Lognetloans	5636	6.571	2.138	-6.568	11.87
Gdp	1540	3.797	4.386	-36.7	34.5
Inflation	5406	6.011	3.547	-4.863	20.286
Er	909	99.973	13.128	53.752	328.257
Bf	1534	65.53	16.47	23.4	100

3.2. Correlation Matrix

The correlation between variables is verified by correlation, and the correlation between variables is verified by the Pearson correlation number method. Table 3 displays the correlation between financial inclusion as bbadlt and FDI and all other descriptive variables. The correlation test results show a significant positive correlation between financial inclusion and FDI, import, and business freedom. At the same time, there is a significant negative correlation between financial inclusion and lognetloans, GDP, inflation, and exchange rate. Moreover, the correlation between business freedom and financial inclusion is relatively high (0.411). The correlation coefficient among the variables is less than 0.8, so we can see that there is no multiple collinearity problem in the model; that is, the establishment of this model is meaningful, and it is beneficial to study the influence of FDI on financial inclusion.

Table 3. Correlation Matrix

Variables	bbadlt	fdi	import	Log netloans	gdp	inflation	er	bf
bbadlt	1.000							
fdi	0.194	1.000						
import	0.295	0.345	1.000					
lognetloans	-0.066	-0.032	-0.045	1.000				
gdp	-0.106	-0.026	0.010	-0.069	1.000			
inflation	-0.111	0.005	-0.056	-0.111	0.150	1.000		
er	-0.033	-0.024	-0.048	-0.044	-0.100	0.045	1.000	
bf	0.411	0.057	0.090	0.133	-0.141	-0.127	0.103	1.000

3.3.Baseline results

The panel quantile regression estimation results are shown in Table 4 below. Since the variables in the used sample do not follow the normal distribution, the study estimates the relationship between FDI and financial inclusion by employing the panel quantile regression method, accounting for both distributional and individual heterogeneity. The table results are stated at the 10th, 25th, 50th, 75th, and 90th quantiles of financial inclusion distribution.

Table 4. Results of Panel Quantile Regression

Dependent variable Bank Branch	bbadlt $q = .10$	bbadlt $q = .25$	bbadlt $q = .50$	bbadlt $q = .75$	bbadlt $q = .90$
FDI	0.156***	0.162***	0.158***	0.136***	0.0914
	(0.000)	(0.000)	(0.000)	(0.000)	(0.069)
IMPORT	0.0624***	0.0720***	0.207***	0.301***	0.487***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LOGLOANS	0.638***	0.679***	0.698***	-0.865***	-6.716***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP	0.0406**	-0.0206*	-0.354***	-0.873***	-0.142
	(0.002)	(0.041)	(0.000)	(0.000)	(0.072)
INFLATION	-0.225***	-0.249***	-0.428***	-0.654***	-1.477***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ER	0.144***	0.000136	0.00343	-0.135***	0.276***
	(0.000)	(0.970)	(0.625)	(0.000)	(0.000)
BF	0.280***	0.338***	0.370***	0.671***	1.207***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	378	378	378	378	378

p-values in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In Table 4, FDI differentially impacts financial inclusion at different quantiles of financial inclusion is crucial. It is noted that the impact of FDI on financial inclusion is heterogeneous over the countries. To elaborate, the coefficient value is much lower in higher quantiles. For

example, at the 25th quantile, the coefficient value is 0.162, and it decreases at the 90th quantile to become 0.0914. This means that a country with more financial inclusion will be less affected by foreign direct investment. Related to the control variables, it is discovered that the impact of import on financial inclusion is positively significant across different quantiles. In the 10th quantile, the coefficient value is 0.0624, which rises to 0.487 at the 90th quantile, indicating that higher imports may further improve financial inclusion in countries with higher levels of financial inclusion. Surprisingly, logloans have a significant positive association with financial inclusion in lower and middle quantiles, whereas it is significantly negative in the higher quantile. And the coefficient value decreased from 0.638 in the 10th quantile to -6.716 in the 90th quantile. Surprisingly, loans have a significant positive association with financial inclusion in lower and middle quantiles, whereas it is significantly negative with financial inclusion in the higher quantile. And the coefficient decreased from 0.638 in the 10th quantile to -6.716 in the 90th quantile.

Furthermore, GDP negatively correlates with financial inclusion in every quantile, except at the 10th. Also, it significantly affects financial inclusion except in the 90th quantile. And In terms of the ER, this study found a significant relationship with FI at the 10th, 75th, and 90th quantiles, but in the 25th and 50th quantiles, there is a positively insignificant relationship between FI and FI ER. Additionally, the BF positively correlates with financial inclusion in all quantiles.

3.4. Robustness Test

To check the consistency of estimated coefficients, the study has found stability in coefficients by employing a panel quantile model with multiple quantiles and using an alternative proxy (bank deposit) for financial inclusion, and the results are reported below.

Table 5. Robustness Test Results

Bank deposit	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	q10	q20	q30	q40	q50	q60	q70	q80
fdi	0.102	0.253	0.791^{**}	0.761^{***}	0.800^{**}	0.844	0.717	0.405
	-0.51	-0.73	-3.27	-3.53	-2.74	-1.73	-0.85	-0.38
import	0.486^{***}	0.382^{***}	0.471^{***}	0.430^{*}	0.423	0.471	0.69	1.855^{**}
	-7.96	-6.3	-3.85	-2.47	-1.65	-1.32	-1.33	-2.73
lognetloans	1.41	-0.404	-0.942	-1.419	-1.198	-1.247	-1.117	-1.06
	-1.4	(-0.54)	(-1.25)	(-1.86)	(-1.55)	(-1.63)	(-1.19)	(-0.69)
gdp	-0.571^{*}	-0.935^{**}	-1.442^{***}	-1.891^{***}	-2.218^{***}	-2.864^{***}	-3.027^{***}	-2.956^{*}
	(-2.56)	(-2.90)	(-4.30)	(-4.48)	(-4.32)	(-4.54)	(-3.54)	(-2.25)
inflation	-0.355	-0.496	-0.926^{***}	-0.472	-0.35	-0.927	-0.867	0.162

	(-1.30)	(-1.64)	(-3.55)	(-1.19)	(-0.61)	(-1.20)	(-1.10)	-0.11
er	0.0839	-0.111	0.0871	0.137	0.286	0.106	-0.0207	0.193
	-0.61	(-0.74)	-0.44	-0.55	-0.99	-0.24	(-0.05)	-0.42
ff	0.154	0.329***	0.390***	0.491***	0.529***	0.346*	0.360**	0.652*
	-1.42	-4.41	-4.79	-6.28	-4.06	-2.44	-2.66	-2.36
_cons	-23.21	11.03	-6.15	-7.35	-20.56	19.5	27.76	-39.04
	(-1.20)	-0.54	(-0.26)	(-0.24)	(-0.58)	-0.43	-0.63	(-0.92)
Obs.	288	288	288	288	288	288	288	288

p-values in parentheses $^{*} p < 0.05$, $^{**} p < 0.01$, $^{***} p < 0.001$

4.   CONCLUSION AND RECOMMENDATION

This paper examines and compares the effect of FDI on financial inclusion in the banking sector in 99 countries from 2005 to 2016. It also included imports, loans, GDP, inflation, exchange rate, and business freedom as additional explanatory variables to reinforce the study. Using the panel quantile regression analysis, this study found that higher foreign direct investment, import, exchange rate, and business freedom will cause higher financial inclusion. On the other hand, if inflation and GDP increase, it will have a negative impact on financial inclusion and causes lower financial inclusion.

The study discovered that foreign direct investment enhances financial inclusion in the banking sector through transmission knowledge, an essential technology for the production and distribution of financial services, and helps to create finance-related and trading networks, which play an essential role which increasing the access ability of financial services to the excluded populace. Also, the study's outcome shows that macroeconomic variables such as import and exchange rate and freedom variables like business freedom also have strong relationships with financial inclusion. GDP has a positive impact on financial inclusion, while inflation and import have a negative influence on it.

According to neoclassical growth theories, FDI is a major source of economic growth and development of host countries, and it is only possible if FDI is augmented with technology; without addition of technological advancement to the host country, there may not be long run positive impact as long run growth is possible only through technological advancement and population growth (Miankhel et al., 2009; Solow, 1956). Based on endogenous growth theory, Makki and Somwaru (2004) explored that FDI can boost economic growth if it causes increasing output returns by positive spillover and technological shifts through diffusion processes.

Since the FDI has a positive impact on enhancing financial inclusion, as the study results show, this paper recommends that government and policymakers closely monitor foreign direct investment by strengthening entrepreneurship, making the macroeconomic framework stable, and also preparing a suitable environment for investment in the country to rise local financial inclusion. Also, they must apply FDI development policies like lower taxation and providing subsidies to attract FDI inflows as it positively affects the financial environment by increasing financial inclusion. This study's main limitation is that it does not include all financial inclusion index variables; bank branches are the only variable that has been used. So, future studies should include more variables that represent financial inclusion to get more accurate and different results.

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