

Financial Inclusion for Forcibly Displaced Persons: The Impact of Aid Conditions¹

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Abstract

Despite limited empirical evidence on the contribution of forcibly displaced persons (FDPs) to host countries' financial inclusion, this research critically examines the direct impact of FDPs inclusion in the financial system and explores the role of international development cooperation in facilitating financial inclusion. By analyzing data from 74 aid recipient countries over a seventeen-year period, employing fixed effects models and a two-step system generalized method of moments estimation technique, the study reveals novel finding that solely including FDPs in the financial system or relying solely on development cooperation does not enhance financial inclusion in developing countries. Rather, the combination of FDPs inclusion and development assistance to the financial sector emerges as an effective strategy for boosting financial inclusion levels. This research provides valuable insights into the design and implementation of policies aimed at fostering financial inclusion for FDPs and highlights the importance of international partnerships in achieving this goal.

Key Words:

forcibly displaced persons; aid for trade; aid conditions; financial inclusion; financial services

1 Introduction

Over the past decade, the global number of forcibly displaced persons (FDPs) has reached unprecedented levels, with a doubling in the past ten years alone, totaling a staggering 108.4 million individuals (Figure 1) in 2022 (UNHCR, 2023). Despite this alarming increase, the efforts to adequately support and find lasting solutions for displaced individuals have fallen short. It is imperative to adopt a comprehensive approach that addresses forced displacement and prioritizes long-term development perspectives, moving beyond short-term humanitarian measures. This shift in focus is crucial to effectively tackle the challenges associated with forced displacement and promote sustainable solutions for those affected. One vital aspect of long-term development measures is ensuring that displaced individuals have access to financial services in their host countries. Such access would enable them to receive wages, safeguard their savings, securely send and receive money, and access credit to start businesses through formal banking channels. Additionally, for refugees seeking to return home or resettle elsewhere, having transferable credit histories becomes crucial. Ultimately, access to financial

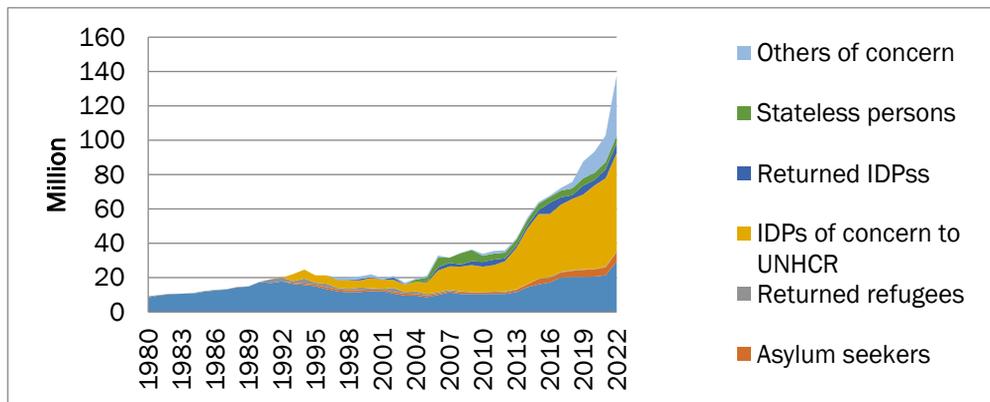
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services in host countries is indispensable for the economic survival and empowerment of refugees (Micol Pistelli, 2023).

Research has shown that FDPs, including refugees and asylum seekers, face numerous challenges and difficulties due to their displacement. However, it is important to recognize that forced displacement can also bring about several opportunities for both the host communities and the economy as a whole. Studies by Georgiou et al. (2023) and Betts et al. (2015) have highlighted how forced displacement can lead to the development of new skills, ideas, and technologies. Displaced individuals often exhibit innovative problem-solving approaches, bring unique trade knowledge and technical skill sets which can contribute to improvement of skill of local labor force, entrepreneurship, and consumer spending (Jiang et al., 2021; Abebe, 2023). Moreover, their presence can create jobs and stimulate economic growth in host countries (Noorbakhsh & Teixeira, 2023; Verme, 2023; Almohammad & Durrah, 2021). These findings underscore the potential positive impact that displaced persons can have on host communities and the overall economy.

Figure 1 Trend of forcibly displaced persons (FDPs)



Source: Author's calculation using UNHCR Database

Despite the economic and social benefits that forced displacement can bring, host countries have made limited efforts to improve financial access for refugees. Critics argue that refugees often lack the necessary identification documents and reliable income sources, making it difficult for them to access banking services and credit. Nevertheless, certain local non-governmental organizations (NGOs) have developed innovative financial products, such as microfinance loans and mobile banking services, specifically tailored for refugees. Additionally, some national and international organizations focus on providing financial education and training to refugees, equipping them with the skills needed for financial management. The issue of financial access for refugees is complex and requires collaboration among governments, financial institutions, and humanitarian organizations. Investigating the potential of forcibly displaced persons (FDPs) to promote financial inclusion in host countries is crucial, given the numerous benefits financial inclusion offers, including promoting savings, empowering women, fostering entrepreneurship, improving living standards, and driving economic growth (Aportela, 2012; Ashraf et al., 2010; Dupas & Robinson, 2013; Sahay et al., 2015).

While development programs can play a crucial role in promoting financial access for refugees and FDPs, another important international development assistance program that can facilitate financial inclusion is aid for trade to financial services (AFTFS). AFTFS aims to enhance financial inclusion through a range of interventions, such as regulatory enhancements, support for microfinance institutions, and the promotion of digital financial services. In recent years, there has been a substantial increase in the amount of aid specifically directed towards the financial sector, rising from US\$ 1,150.841million in 2000 to \$4,004.851 million in 2021 in the sample countries. The primary objective of this aid is to support the financial sector stability and development of developing nations. However, despite the clarity of this objective, there is still a lack of sufficient evidence regarding the effectiveness of aid in promoting financial development within the financial sector. The topic of the effectiveness of foreign aid in developing countries has been a subject of extensive research in the field of economics in recent times (Maruta, 2019). Besides, the effectiveness of AFTFS is a topic of debate, with studies emphasizing the significance of considering the political economy of financial systems and local contexts when designing and implementing such programs (Abate, 2022; Santiso, 2021; Burnside & Dollar, 2000; Hansen & Tarp, 2001). Currently, empirical evidence regarding the effectiveness of development assistance initiatives like AFTFS in promoting financial inclusion is limited. Further research is necessary to better understand how AFTFS can effectively contribute to advancing financial inclusion objectives.

This study fills an important gap in the literature by providing the first empirical analysis at the country level on the relationship between FDPs, AFTFS, and multidimensional financial inclusion. Existing studies have primarily relied on limited indicators to assess financial inclusion, such as the number of bank branches or ATMs per 100,000 adults (Mookerjee & Kalipioni, 2010; Neaime & Gaysset, 2018). However, these indicators fail to capture the full scope of financial inclusion, which encompasses various dimensions including outreach, literacy, and usage. Consequently, there is a lack of research examining the effect of FDPs and AFTFS on multidimensional financial inclusion in developing countries. This study addresses this gap by utilizing panel data from 74 aid recipient countries spanning the period 2004-2021. It introduces a comprehensive composite financial inclusion index developed through principal component analysis, enabling an examination of the impact of FDPs and AFTFS on financial inclusion. The study also explores whether the relationship between FDPs and financial inclusion is conditional on AFTFS, and vice versa, employing panel data fixed effects regression models and conducting additional tests using alternative regression techniques like the two-step generalized method of moments (GMM) estimation to ensure the robustness of the findings.

This study provides explicit findings regarding the ongoing debate on the relationship between forcibly displaced persons (FDPs), aid for trade, and financial inclusion. Firstly, this study finds that FDPs have a positive impact on financial inclusion, indicating that FDPs or refugees can contribute to improving financial inclusion levels of the host countries. Secondly, this research finds a negative impact of AFTFS on financial inclusion, suggesting that simply providing aid for the development of financial services and markets does not necessarily promote financial inclusion. However, this study reveals a conditional positive and significant impact of FDPs and AFTFS on financial inclusion. This means that for FDPs to effectively enhance financial inclusion in the host country, they require additional development support and awareness programs. In other words, when AFTFS is

channeled through targeted development initiatives for FDPs, it enhances the effectiveness of aid for trade in promoting financial inclusion. Importantly, all findings remain robust even after accounting for unobserved heterogeneity and potential endogeneity using the generalized method of moments (GMM) approach.

The paper is organized as follows. Section 2 presents a comprehensive literature review and formulates hypotheses based on existing evidence concerning the relationship between forcibly displaced persons (FDPs), aid for trade for banking and financial services (AFTFS), and financial inclusion. Section 3 outlines the data sources and methodology employed in this study. Section 4 discusses and interprets the empirical results obtained from analysis. Finally, Section 5 concludes the paper by summarizing the key findings and highlighting their implications for policy and future research in this field.

2 Literature Review and Hypothesis Development

2.1 Forcibly Displaced Persons (FDPs) and Financial Inclusion

Forced displacement is a major global issue affecting over 108.4 million people due to conflict, persecution, and violence (UNHCR, 2023). FDPs face limited access to financial services, which can worsen their vulnerability and hinder their ability to rebuild their lives. The literature on FDPs and financial inclusion consists of several strands. One strand examines the challenges and opportunities for financial inclusion faced by refugees and other FDPs, including barriers such as lack of identification documents and financial literacy, as well as the potential for financial technology to address some of these barriers (OECD, 2016; Toronto Center, 2019). Another strand explores the role of financial inclusion in supporting the economic and social inclusion of FDPs, including the potential for financial inclusion to support entrepreneurship, livelihoods, and social cohesion (El-Zoghbi et al., 2017). A third strand looks at the broader macroeconomic and policy implications of forced displacement for financial inclusion and financial sector development, including the impact of refugee flows on financial system stability and efficiency, and the role of policy interventions and development assistance in promoting financial inclusion for FDPs (Nyberg et al., 2002; OECD, 2015). Additionally, the COVID-19 pandemic has highlighted the need for more targeted and flexible financial inclusion interventions for FDPs (GIZ, 2022; Habersky and Damir, 2021). Overall, the existing literature underscores the importance of financial inclusion in supporting the economic and social inclusion of FDPs, as well as the need for continued research and policy attention to address the challenges and opportunities of promoting financial inclusion among this vulnerable population. Combining these above areas of literature that are relevant to this paper, there is limited proof on the effects of FDPs on financial inclusion of developing countries. FDPs can contribute to promoting financial inclusion by creating demand for financial services and products, particularly in contexts where they lack access to formal financial services. They may have unique financial needs and behaviors that create opportunities for financial service providers to develop new products and services through tailored financial inclusion programs. Overall, FDPs have the potential to play an important role in promoting financial inclusion and sector development. Based on these above theoretical justifications, the first hypothesis of this study is:

Hypothesis 1: The more access of refugees or FDPs to financial services, the higher a country's financial inclusion is.

2.2 Aid for Trade for Banking and Financial Services (AFTFS) and Financial Inclusion

AFTFS refers to the financial assistance provided by donor countries to the financial sector of developing nations. The existing literature lacks a comprehensive examination of the relationship between financial inclusion and aid to the financial sector. The relationship between AFTFS and inclusion is firstly investigated by Lee et al. (2022). Agapova and Vishwasrao (2020) and Maruta (2019) conducted studies investigating the influence of financial aid. However, their research primarily focused on the relationship between financial aid and financial development as well as financial intermediation. Nevertheless, it is generally anticipated that financial sector foreign aid would have a positive impact on the growth of financial inclusion in the receiving country. The underlying expectation is that an increase in funds flowing into the financial intermediation sector, including aid, would result in greater access to lending for both the public and private sectors. Additionally, it is anticipated that such aid would lead to enhancements in financial infrastructure and efficiency.

The relationship between AFTFS and financial inclusion is supported by several strands of literature. One strand focuses on the impact of aid on institutional quality, as highlighted by Pinho et al. (2015) and Alhassan et al. (2019). It is argued that financial aid can contribute to enhancing institutional quality, leading to improved infrastructure innovation in the financial industry and better access to finance for individuals and businesses. Ali et al. (2021), using data from 45 countries, provide further support by highlighting the positive effect of institutional quality on the nexus between financial inclusion and financial development. Another strand of literature explores how AFTFS promotes financial development in recipient countries, as suggested by Fromentin (2018) and Kasuga (2007). In contrast, Maruta (2019) examines a similar research question but arrives at opposing findings. Maruta's study focuses on the impact of financial sector aid on financial development, finding a positive relationship between per capita financial sector aid and private sector credit provided by banks measured as a percent of GDP.

Taken together, this paper contributes to the existing literature by examining the influence of financial aid on financial development and its subsequent impact on financial inclusion in aid recipient developing countries. By considering AFTFS as a guiding factor in financial development, it enhances understanding of the relationship between financial aid and financial inclusion. Based on the above studies, this study suggests the second hypothesis:

Hypothesis 2: The more AFTFS to financial sectors, the higher a country's financial inclusion is.

2.3 How AFTFS Affects the Effectiveness of FDPs, vice-versa, in Promoting Financial Inclusion: Some Mechanisms

The relationship between AFTFS, access to finance, and financial inclusion is widely anticipated. AFTFS plays a pivotal role in injecting capital resources into the financial sector, thereby increasing lending opportunities, enhancing financial infrastructure, and improving efficiency. Greater access to financial services has been found to foster financial inclusion, as supported by the World Bank (2022). The inclusion of FDPs further amplifies these positive effects, as evidenced by studies such as Matrin (2019). However, it is crucial to acknowledge that the impacts of AFTFS and FDPs may vary in terms of size, effectiveness, and efficiency. While the potential benefits are evident, there is a dearth of

empirical evidence on the macroeconomic and conditional effects of AfTFS and FDPs on financial inclusion.

Promoting financial inclusion among FDPs can be achieved through leveraging financial sector aid and implementing various strategies. Firstly, enhancing access to financial services tailored to the needs of FDPs is crucial. AfTFS can be utilized to establish inclusive financial systems, employing technologies such as mobile banking and digital payment platforms to facilitate easier financial service access. Secondly, microfinance initiatives can empower FDPs to start or expand small businesses, thereby fostering economic independence and contributing to their financial inclusion. Thirdly, financial education programs and capacity-building initiatives equip FDPs with the knowledge and skills necessary for making informed financial decisions and effectively utilizing financial services. Collaboration between financial institutions, humanitarian organizations, and stakeholders is crucial in creating customized financial products and services that address the unique circumstances of FDPs. Additionally, advocating for policies that support the financial inclusion of FDPs and working with governments and regulatory bodies to remove barriers and ensure access to financial services are important steps.

The symbiotic relationship between AfTFS and FDPs is significant, with AfTFS providing resources and support to enhance FDPs, and effective FDPs optimizing the outcomes of AfTFS initiatives. This creates an environment conducive to financial inclusion, enabling marginalized individuals and communities to access and benefit from formal financial services. A study conducted by Atiyat (2018) highlighted the potential of financial aid in promoting financial inclusion among Syrian refugees in Jordan. Comprehensive strategies were proposed, including the integration of refugees with local communities through the creation of employment opportunities. By addressing the economic needs of refugees and facilitating their participation in the formal financial system, this approach contributed to their financial inclusion. Furthermore, the interaction between AfTFS and FDPs can generate positive feedback loops, where the enhanced effectiveness of FDPs reinforces the impact of subsequent AfTFS initiatives. Successful financial inclusion efforts demonstrate the potential of AfTFS, attracting further funding and support for future programs. Based on these limited pieces of evidence, the study proposes the third hypothesis:

Hypothesis 3: The positive effects of AfTFS are conditional on the specific area targeted for assistance. Similarly, the effects of FDPs in promoting financial inclusion are conditional on international aid assistance.

3 Data and Methodology

3.1 Data Source and Variables Selection

The study uses panel data from 74 developing countries that are recipients of aid, covering the period of 2004-2021 and relying on up-to-date available secondary data particularly on indicators of financial inclusion. A list of 74 countries is presented in Appendix Table A1.

Multiple sources were utilized to gather data on the variables employed in this analysis. The primary focus of this study revolves around two key explanatory variables: FDPs and AfTFS. FDPs refer to individuals who have been compelled to leave their home country due to persecution, war, or violence. To approximate the number of FDPs, this paper adopts

the total refugee population by country as a proxy variable, drawing data from the UNHCR refugee database. Additionally, data on AftFS (measured in million USD) are acquired from the OECD Creditors Reporting System (CRS) database. The concept of AftFS encompasses the cumulative disbursement of aid for trade intended to support various aspects of financial policy and administration, including monetary institutions, formal sector financial intermediaries, informal/semi-formal financial intermediaries, remittance facilitation, promotion and optimization, as well as education and training in banking and finance.

For the dependent variable, the study aims to measure the level of financial inclusion (FI), a multidimensional concept with no consistent method for measurement (Camara & Tuesta, 2014; Nguyen, 2020). Due to limited data availability from 2004 to 2021, this research adopts a novel approach proposed by Camara and Tuesta (2014) to create a composite financial inclusion index (CFII) using principal component analysis. The CFII considers both supply-side and demand-side determinants of financial inclusion. The supply-side factors include the availability of automated teller machines (ATM) and commercial bank branches (CBB) per 100,000 adults. The demand-side factors encompass the usage of financial services, represented by outstanding deposits with commercial banks as a percentage of GDP (OTD). Another significant factor on the demand side is the widespread use of mobile phones and tablets. These devices, equipped with subscriber identity module (SIM) cards and internet connectivity, have revolutionized access to financial services by offering convenience, affordability, and flexibility. They have played a vital role in bridging the gap between individuals and financial institutions, particularly benefiting underserved populations and driving financial inclusion efforts (Glavee-Geo et al., 2019). To capture this factor, the study used mobile cellular subscriptions per 100 people (MCS) as a proxy variable. Furthermore, the study takes into account the capacity and knowledge level of individuals through the variable mean years of schooling (MYS) due to the fact that individuals who are educated and knowledgeable are more likely to engage in positive savings behaviors and less likely to rely on informal sources of borrowing (Hasan et al., 2021). By incorporating MYS, the study acknowledges the importance of education in promoting financial inclusion and empowerment. The CFII is derived by combining these availability, usage, and access dimensions using Principal Component Analysis (PCA). The framework for measuring CFII is as follows:

$$CFII_{s,y} = \omega_1 \ln ATM_{s,y} + \omega_2 \ln CBB_{s,y} + \omega_3 \ln MCS_{s,y} + \omega_4 \ln OTD_{s,y} + \omega_5 \ln MYS_{s,y} + \varepsilon$$

In this equation, $CFII_{s,y}$ represents the composite financial inclusion index for a specific country (s) and year (y). $\omega_1, \omega_2, \omega_3, \omega_4$ and ω_5 represent the weights obtained from the PCA of the corresponding indicators and ε is the error term. Before conducting PCA, each indicator value is transformed using the natural logarithm and then normalized (\ln). The weights for each variable are obtained from the rotated component matrix. The analysis finds, one principal component (Comp1) with an eigenvalue of 2.62058, which explains 52.41% of the total variance (Appendix-Table A2). The rotated component (after applying the varimax rotation) also remains as Comp1 (Appendix-Table A3). Thus, the equation for measuring CFII would be the following:

$$CFII_{s,y} = 0.5157 \ln ATM_{s,y} + 0.4565 \ln CBB_{s,y} + 0.2957 \ln MCS_{s,y} \\ + 0.4678 \ln OTD_{s,y} + 0.4685 \ln MYS_{s,y}$$

The resulting CFII value is also normalized and ranges between 0 and 100, where a value close to 0 represents low financial inclusion, and a value approaching 100 indicates a high level of inclusion. Data on ATM, CBB and OTD are obtained from the Financial Access Survey database of the International Monetary Fund, while data on MCS are collected from the World Development Indicators (WDI) database of the World Bank and data on MYS are collected from the Human Development Index (HDI) database.

3.2 Empirical Specifications

The empirical model to measure the impact of FDPs and AfTFS on increasing financial inclusion is grounded in both empirical studies and theoretical perspectives suggesting that expanding people's access to finance and providing greater development aid to the financial industry contribute to higher levels of financial inclusion (Rao, 2015; UNCTAD, 2021). Additionally, the model recognizes the crucial role of access to finance in promoting economic development and improving social welfare (Kim et al., 2018; Zeqiraj et al., 2022). This study initiates the empirical analysis by employing a straightforward ordinary least squares (OLS) regression model. The OLS regression is chosen due to its simplicity and allows for robust standard errors. The regression model is specified as follows:

$$CFII_{s,y} = \zeta_0 + \zeta_1 \ln FDP_{s,y} + \zeta_2 \ln AfTFS_{s,y} + \sum_{i=1}^j \delta_i X_{i,s,y} + v_s + u_y + \varepsilon_{s,y}$$

where, $CFII_{s,y}$ represents the composite digital financial inclusion index for a specific country (s) and year (y). ζ_0 is the intercept term capturing the baseline level of the CFII when all other variables are zero. ζ_1 , and ζ_2 are the coefficients respectively capture the effect of FDPs, and AfTFS on the CFII independently. ζ_1 and $\zeta_2 > 0$ imply that giving opportunity to FDPs to access to formal financial services and more development aid to support financial services increases the financial inclusion of a country, thus testing Hypothesis 1 and Hypothesis 2.

X_i is the vector of other explanatory variables with corresponding coefficient δ_i (where $i = 1, 2, 3, \dots, j$), capture other factors that may influence financial inclusion, beyond FDPs and AfTFS. Selection of other explanatory variables mostly follows previous studies by Naceur and Samir (2007), Sarma and Pais (2011), Evans and Adeoye (2016), Pradhan et al. (2016), Aslan et al. (2017), Kim et al. (2018), Grohmann et al. (2018), Demirguc-Kunt et al. (2020), Al-Smadi (2023), and Murshed et al. (2023).

Subsequently, in order to examine whether the impact of AfTFS is contingent upon the specific area of focus, such as FDPs, and vice versa, this study introduces an interaction term between AfTFS and FDPs in the baseline regression model. This results in the following equation:

$$CDFII_{s,y} = \zeta_0 + \zeta_1 \ln FDP_{s,y} + \zeta_2 \ln AfTFS_{s,y} + \zeta_3 (\ln FDP_{s,y} * \ln AfTFS_{s,y}) \\ + \sum_{i=1}^j \delta_i X_{i,s,y} + v_s + u_y + \varepsilon_{s,y}$$

Where, $\zeta_3 > 0$ indicates a positive interaction effect between FDPs and AfTFS on the level of financial inclusion. This suggests that the impact of AfTFS on financial inclusion is conditional on the specific area targeted for assistance, such as FDPs. In other words, the combined effect of FDPs and AfTFS on financial inclusion is greater than the sum of their individual effects, indicating a synergistic relationship between these factors in promoting financial inclusion, testing Hypothesis 3.

4 Empirical Findings and Discussion

4.1 Summary Statistics and Correlation Matrix

Table I provides a summary of the statistics for the variables considered in this analysis. The table is divided into sections, including main summary statistics for explanatory variables (lnFDP and lnAfTFS), baseline control variables, additional control variables, and financial inclusion indicators. The dataset contains a total of 1,331 observations. The main explanatory variables, FDP and AfTFS, have average values of 8.47 and -15.09, respectively. The dependent variable, measured using PCA, ranges from 0 to 100 with a mean of 43.61. Appendix Table 1A presents the ranking of countries based on their average CFII, revealing that Montenegro has the highest CFII of 56.64, followed by Belarus, Mongolia, and Serbia, while Chad has the lowest CFII.

Table II presents the correlation matrix, displaying the pairwise correlations between the variables. Notably, a negative correlation is observed between CFII and the log of FDP, suggesting that as the number of forcibly displaced persons decreases, financial inclusion tends to increase. Additionally, positive correlations are found between CFII and variables such as trade openness (TO), financial development (FD), foreign direct investment (FDI), human development index (HDI), log of GDP (lnGDP), and technology (TECH). These positive associations indicate that higher levels of these factors are associated with greater financial inclusion. However, the correlation matrix also indicates the presence of multicollinearity, particularly between HDI and TECH, as well as lnGDP and TECH, with correlation coefficients exceeding 0.7. Despite the presence of multicollinearity, the mean variance inflation factors (VIFs) of 2.19 suggest that multicollinearity is not a significant concern in the analysis, as the values remain below the threshold mean VIF of 10.

Table 1: Summary statistics

Variables	Notation	Observation	Mean	Std. Dev.	Min	Max
Forcibly displaced persons (Total number of refugees by country)	FDP	1,327	53753.89	217808.90	5.00	3759817.00
Log of FDP	lnFDP	1,327	8.47	2.37	1.61	15.14
Aid for trade for banking & financial services (million, USD)	ATFS	1,309	31.99	105.88	0.00	1738.17
Total Population (number)	POP	1,332	6.70E+07	2.14E+08	2.77E+05	1.40E+09
Log of per capita ATFS	lnATFS	1,307	-15.09	2.29	-26.23	-8.57
Baseline control variables:						
Trade Openness (Trade as % of GDP)	TO	1,324	75.25	31.06	20.72	210.37
Financial Development (Domestic credit by banks % of GDP)	FD	1,192	38.77	30.63	1.27	182.87
Foreign Direct Investment (% of GDP)	FDI	1,326	4.20	5.30	-37.17	54.37
Inflation rate (%)	INF	1,332	8.16	22.00	-30.20	558.56
Additional control variables:						
Domestic investment (Gross fixed capital formation % of GDP)	DINV	1,316	23.08	7.33	2.00	81.02
Human development index	HDI	1,331	0.64	0.12	0.33	0.85
Log of GDP (GDP, PPP, constant 2017 international USD)	lnGDP	1,332	25.31	1.76	21.69	30.84
Technology (Log of fixed broadband subscriptions)	TECH	1,287	11.84	2.97	2.89	20.10
Total natural resources rents (% of GDP)	TNRR	1,332	7.17	9.66	0.00	66.65
Financial inclusion indicators (log normalized):						
Automated teller machines (ATMs) (per 100,000 adults)	lnATM	1,250	0.18	0.04	0.00	1.00
Commercial bank branches (per 100,000 adults)	lnCBB	1,299	0.64	0.17	0.00	1.00
Outstanding loans from commercial banks (% of GDP)	lnLOTD	1,332	0.22	0.09	0.00	1.00
Mobile cellular subscriptions (per 100 people)	lnMCS	1,331	0.81	0.14	0.00	1.00
Mean Year of Schooling	lnMYS	1,331	0.73	0.20	0.00	1.00
Dependent Variable						
Composite Financial Inclusion Index	CFII	1,229	43.61	9.61	0.00	100.00

Table I. Correlation matrix

	CFII	lnFDP	lnATFS	TO	FD	FDI	INF	DINV	HDI	lnGDP	TECH	TNRR
CFII	1											
lnFDP	-0.17	1										
lnATFS	0.22	0.09	1									
TO	0.21	-0.34	0.16	1								
FD	0.53	-0.11	0.07	0.25	1							
FDI	0.06	-0.14	0.21	0.37	0.01	1						
INF	-0.03	0.02	-0.04	-0.02	-0.11	-0.02	1					
DINV	0.09	-0.06	-0.04	0.22	0.11	0.28	-0.13	1				
HDI	0.86	-0.14	0.09	0.17	0.45	0.01	-0.01	0.059	1			
lnGDP	0.31	0.22	-0.26	-0.39	0.37	-0.26	0.00	0.06	0.41	1		
TECH	0.68	0.13	-0.04	-0.19	0.50	-0.17	0.01	0.05	0.70	0.79	1	
TNRR	-0.35	0.18	-0.19	0.06	-0.32	0.10	0.05	0.14	-0.23	-0.05	-0.24	1

4.2 Baseline Regression Results and Discussions

Table III displays the estimated outcomes for the fixed effects baseline specification, which aims to analyze the direct influence of two factors on composite financial inclusion index (CFII): (i) forcibly displaced persons (FDPs) and (ii) aid for trade disbursed to banking and financial services (AftFS). To ensure more accurate and unbiased estimates, this study incorporates country and year fixed effects in all models and compute robust standard errors. These adjustments help account for the specific characteristics and variations across countries and years, providing a more reliable analysis of the impact of FDPs and AftFS on CFII.

Table III. The impact of FDPs and AftFS on financial inclusion

VARIABLES	(1) nCFII	(2) nCFII	(3) nCFII	(4) nCFII	(5) nCFII	(6) nCFII
FDP (log)	0.174 (0.219)	0.180 (0.219)	0.0946 (0.154)	0.0802 (0.152)	0.0758 (0.152)	0.0481 (0.134)
AftFS per Capita (log)	0.0152 (0.0910)	-0.00232 (0.0890)	-0.0370 (0.0799)	-0.0239 (0.0798)	-0.0251 (0.0798)	-0.0412 (0.0684)
Trade Openness (% GDP)		0.0199 (0.0161)	0.0293 (0.0187)	0.0260 (0.0190)	0.0266 (0.0191)	0.0235 (0.0166)
Financial Development (% GDP)			0.0626*** (0.0211)	0.0625*** (0.0208)	0.0616*** (0.0212)	0.0322** (0.0145)
FDI (% GDP)				0.0577** (0.0289)	0.0576** (0.0288)	0.0137 (0.0293)
Inflation rate (%)					-0.00433** (0.00191)	-0.00206 (0.00198)
Domestic Investment (% GDP)						0.0516* (0.0286)
Human Development Index						28.94* (15.07)
Gross Domestic Products (log)						9.554*** (2.448)
Technology (log)						0.153 (0.264)
Natural Resources Rent (% GDP)						-0.0157 (0.0478)
Constant	30.51*** (2.143)	28.69*** (2.474)	25.92*** (2.816)	26.24*** (2.823)	26.29*** (2.821)	-229.2*** (60.05)
Observations	1,204	1,198	1,073	1,070	1,070	1,039
Mean VIF	1.01	1.10	1.12	1.17	1.15	2.19
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Hausman (Prob>chi2)	0.0012	0.000	0.0003	0.0006	0.0006	0.000
R-squared	0.651	0.651	0.739	0.743	0.743	0.792
Number of countries	74	74	74	74	74	74

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The results from the baseline regression analysis in Column 1 suggest that there is no significant relationship between the increase in FDPs and AftFS with FI in developing countries. This supports initial hypothesis of the study that FDPs and AftFS do not directly promote financial inclusion. One possible explanation for this lack of relationship is that migrants or refugees often face challenges in accessing banking and financial services due to the lack of proper identification documents, which can limit their ability to open bank accounts. Without access to these services, their options for saving, receiving money, or obtaining formal loans are restricted, impeding their full participation in the financial inclusion process of the country.

Additionally, the coefficient of AftFS (ζ_2) is negative but not statistically significant. This finding could be attributed to the fact that AftFS is typically directed towards capacity building of banks and financial institutions on the supply side. However, the effectiveness of aid in achieving various development outcomes remains a complex issue, with challenges such as corruption and the capacity to utilize development assistance prevalent in many developing countries. Thus, based on the results from Column 1, this study cannot draw definitive conclusions regarding the impact of increasing refugees or AftFS on financial inclusion or determine if this relationship is contingent on other factors.

In baseline model, this study included trade openness (TO), financial development (FD), foreign direct investment (FDI), and inflation as common control variables. The coefficients for trade openness in all columns are not statistically significant, indicating that there is no strong evidence of a significant relationship between trade openness and financial inclusion. The p-values associated with these coefficients are likely higher than the typical threshold for statistical significance (e.g., $p < 0.05$). Therefore, based on the given information, the study cannot conclude that trade openness has a significant impact on financial inclusion. On the other hand, the coefficients for financial development in all columns are positive and statistically significant, suggesting that a higher level of financial development, represented by a larger financial sector relative to GDP, is associated with higher levels of financial inclusion. This implies that countries with more developed financial systems tend to have greater access to financial services and promote financial inclusion. Moreover, the coefficients for foreign direct investment in columns 5 and 6 are positive and statistically significant, indicating that higher levels of FDI as a percentage of GDP are associated with increased financial inclusion. This aligns with economic theories that propose FDI's contribution to economic growth, technological advancement, and financial market development. Foreign investors can stimulate economic activities, create job opportunities, and improve access to financial services, thereby promoting financial inclusion. Additionally, the negative and statistically significant coefficients for inflation in columns 5 and 6 suggest that higher inflation rates are associated with lower levels of financial inclusion. This is consistent with economic reasoning, as high inflation erodes the purchasing power of money, making it more challenging for individuals to save, invest, and participate in formal financial systems. Consequently, higher inflation rates can hinder financial inclusion by limiting individuals' ability to access and utilize financial services effectively.

The additional control variables, including domestic investment, human development index (HDI), gross domestic product (GDP), technology, and natural resources rent (NRR), were included in the regression model to examine their impact on the stability of the effects of FDPs and AftFS on financial inclusion. The regression results indicate that

domestic investment, HDI, and GDP have significant effects on financial inclusion. A higher level of domestic investment relative to GDP is associated with increased financial inclusion, as it stimulates economic growth, creates employment opportunities, and improves access to financial services. Similarly, countries with higher levels of human development, including education, health, and living standards, tend to have greater financial inclusion, highlighting the role of human development in facilitating access to formal financial systems. Additionally, a larger GDP reflects a stronger economy and better access to financial services, contributing to higher levels of financial inclusion. However, the coefficient for technology is not statistically significant, suggesting that its impact on financial inclusion may be less pronounced. Similarly, the presence of natural resources, as indicated by natural resources rent (NRR), does not significantly affect financial inclusion, indicating that other factors such as financial system development, human development, and economic stability may play a more significant role in determining financial inclusion levels.

4.3 Results on the Impact of Aid Conditions on Financial Inclusion

The coefficients in Table IV indicate the impact of aid conditions, specifically AfTFS and targeted assistance for FDPs, on financial inclusion. The positive and statistically significant coefficient for FDP suggests that targeted assistance for forced displaced persons has a positive effect on financial inclusion. This finding can be justified by the fact that FDPs often face unique challenges in accessing financial services, and targeted assistance can help overcome these barriers, improving their inclusion in the financial system.

Table IV. The impact of aid conditions on financial inclusion

VARIABLES	(1) nCFII	(2) nCFII	(3) nCFII	(4) nCFII	(5) nCFII	(6) nCFII
FDP (log)	0.973* (0.528)	1.077** (0.530)	0.820** (0.345)	0.798** (0.349)	0.801** (0.347)	0.624** (0.261)
AfTFS per Capita (log)	-0.439** (0.217)	-0.515** (0.215)	-0.453** (0.207)	-0.436** (0.210)	-0.442** (0.209)	-0.287* (0.164)
AfTFS × FDP	0.0532** (0.0258)	0.0597** (0.0259)	0.0484** (0.0206)	0.0479** (0.0206)	0.0484** (0.0205)	0.0382** (0.0174)
Trade Openness (% GDP)		0.0215 (0.0160)	0.0307 (0.0187)	0.0278 (0.0189)	0.0284 (0.0190)	0.0248 (0.0166)
Financial Development (% GDP)			0.0617*** (0.0211)	0.0617*** (0.0208)	0.0607*** (0.0211)	0.0321** (0.0145)
FDI (% GDP)				0.0541* (0.0273)	0.0539* (0.0271)	0.0111 (0.0292)
Inflation rate (%)					-0.00457** (0.00192)	-0.00227 (0.00198)
Domestic Investment (% GDP)						0.0524* (0.0298)
Human Development Index						29.37* (14.83)
Gross Domestic Products (log)						9.338*** (2.435)
Technology (log)						0.151 (0.262)
Natural Resources Rent (%GDP)						-0.0173 (0.0475)
Constant	23.71*** (4.459)	20.87*** (4.632)	19.61*** (4.096)	19.97*** (4.156)	19.96*** (4.151)	-229.1*** (60.30)
Observations	1,204	1,198	1,073	1,070	1,070	1,039
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Hausman (Prob>chi2)	0.0028	0.001	0.0004	0.0009	0.001	0.000
R-squared	0.653	0.653	0.741	0.745	0.746	0.794
Number of countries	74	74	74	74	74	74

Note: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0$.

On the other hand, the negative and statistically significant coefficient for AfTFS per Capita indicates that higher levels of foreign direct investment in financial services are associated with lower levels of financial inclusion. This result may be explained by the conditional nature of aid disbursements. While AfTFS aims to promote financial sector development, the negative relationship suggests that the impact of aid on financial inclusion may be influenced by other factors such as governance, institutional capacity, and the effectiveness of aid utilization. Thus, funds might not be shifted towards the developing countries where the resources cannot be effectively utilized. Zeqiraj et al., (2022) and Ali et al., (2020) showed that although more aid is provided, the quality of

financial institutions is deteriorated due to the corruption in the industry. Financial institutions with high corruption and poor governance level impede opportunities for higher access to finance (Corrado, 2020).

The positive and statistically significant coefficient for the interaction term $AfTFS \times FDP$ indicates that the impact of $AfTFS$ on financial inclusion depends on the presence of targeted assistance for forced displaced persons (FDPs). This suggests a synergistic effect between $AfTFS$ and FDPs, meaning that when aid disbursements are specifically targeted at financial services and combined with assistance for FDPs, they work together to enhance financial inclusion. This combination effectively addresses the unique challenges faced by displaced populations, leading to increased access to financial services and promoting financial inclusion. The findings emphasize the importance of directing development assistance towards specific groups, such as refugees and immigrants, rather than solely focusing on capacity building for financial institutions. By addressing policy and access barriers for these individuals, aid can effectively facilitate their access to financial services, ultimately fostering greater financial inclusion. Overall, these results highlight the importance of aid conditions in shaping financial inclusion outcomes. Targeted assistance for forced displaced persons and the interaction between foreign direct investment in financial services and targeted assistance can have significant implications for promoting financial inclusion, providing valuable insights for policymakers and organizations involved in aid allocation and development programs.

4.4 Robustness Test Using Alternative Methods and Dynamic Panel Data Models

To ensure the robustness of findings, this study employs three different approaches. Firstly, the study augments the model with additional macro-economic variables, as demonstrated in Column 6 of each Table III and Table IV. Secondly, it conducts post-estimation tests of panel data fixed effects model, including assessments of cross-sectional dependence and serial correlation. Since the study finds both cross-sectional dependence and serial correlation are present in the models, it further applies the Driscoll and Kraay (1998) standard errors model to validate the consistency of earlier findings. Lastly, the study undertakes a final robustness analysis by adopting an alternative estimation strategy – a dynamic panel regression method using the system generalized method of moments (SGMM). This approach accounts for the dynamic nature of financial inclusion and addresses potential endogeneity issues in the model. Through these rigorous tests and alternative methods, this study strengthens the reliability and validity of research outcomes.

The main results of the Driscoll and Kraay standard error methods and two-step SGMM model are shown in Table V. In running GMM estimation this study follows Blundell and Bond (2000) and Roodman (2009) methods for two-step estimators. In the Driscoll-Kraay model, the coefficients for FD and TO remain statistically significant and exhibit consistent positive effects on financial inclusion. Specifically, higher levels of FD and TO are associated with increased financial inclusion. However, the coefficient for inflation rate shows varying significance levels between the two methods. While both techniques confirm a negative relationship between inflation and financial inclusion, the significance level differs slightly. In the System GMM method, the coefficients for FDP and $AfTFS$ per capita also show notable changes in their significance levels compared to the earlier models. Nevertheless, the interaction term $AfTFS \times FDP$ retains its positive and statistically significant association with financial inclusion. These robustness tests strengthen the

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Driscoll-Kraay	System GMM	Driscoll-Kraay	System GMM	Driscoll-Kraay	Driscoll-Kraay	System GMM
YearEffect	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Instruments		25		37			41
pvalueAR(1)		0.024		0.023			0.037
pvalueAR(1)		0.555		0.187			0.152
pvalueSargan		0.386		0.470			0.387
pvalueHansen		0.452		0.766			0.828
Required	0.7434		0.7459		0.7919	0.7936	

Note: Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Two-step system GMM estimator implemented in STATA's 'xtabond2' command. The model includes lagged variables at lags 2 and 4 to control Instruments $< N$, and the GMM estimator is corrected for small-sample correction, robust standard errors, and an orthogonal transformation for the moment conditions.

While considering additional five control variables in the model and employ Driscoll-Kraay and GMM estimation with and without interaction term (from Column 5 to 7), the interaction variable, AftFS \times FDP, is significant in both the Driscoll-Kraay model (Column 5) and the System GMM method (Column 7). This interaction term represents the combined effect of AftFS and FDP on financial inclusion and the results are still consistent with the earlier findings. The positive and significant coefficient suggests that the impact of financial assistance on financial inclusion is contingent on the presence of targeted aid for forced displaced persons. In other words, when aid is specifically directed towards the development of forced displaced populations, along with financial services support, it has a synergistic effect that enhances financial inclusion.

Economically, this finding highlights the importance of addressing the unique challenges faced by forced displaced individuals in accessing financial services. By providing targeted aid to overcome policy barriers and improve access to financial services for this vulnerable population, financial inclusion can be effectively promoted. This can have significant implications for refugees, immigrants, and other displaced individuals in developing countries, enabling them to overcome financial exclusion and participate more actively in economic activities. The interaction term also underscores the need for policymakers and aid organizations to recognize the specific needs and circumstances of forced displaced persons when designing and implementing financial inclusion programs. By tailoring assistance to address the challenges faced by this population, including limited access to formal financial services, financial literacy, and policy barriers, the effectiveness and impact of financial inclusion initiatives can be greatly enhanced.

5 Conclusion and Policy Suggestions

This study aimed to empirically examine the potential impact of forcibly displaced persons (FDPs) and aid for trade on financial services (AftFS) on the financial inclusion of 74 developing countries using panel data from 2004 to 2021. The baseline regression, employing a fixed effects model, initially showed that FDPs and AftFS did not have a significant effect on financial inclusion. However, robustness tests, incorporating additional control variables and utilizing the Driscoll-Kraay standard error and two-step SGMM estimation techniques, provided further insights.

This study found that the relationship between FDPs and AftFS on financial inclusion is conditional. Specifically, when aid from multinational and development partners is

directed towards improving the situation of FDPs or refugees through initiatives such as financial literacy programs and efforts to minimize policy barriers set by central banks and governments, it can enhance the financial inclusion of aid recipients. This underscores the significance of financial education programs, supported by development partners and donors, in promoting financial inclusion for migrants, refugees, and other vulnerable populations. These programs can facilitate financial planning, enhance the effective utilization of loans and savings, and improve the efficient transfer of remittances.

In contrast, the direct effect of AFTFS on financial inclusion was found to be negative and statistically significant. This implies that foreign aid specifically targeting banking and financial services does not necessarily promote financial inclusion. Instead, it emphasizes the importance of development partners ensuring good governance and appropriate utilization of development aid in the financial sector. Targeted and sector-specific disbursement of aid for financial services becomes crucial in order to achieve financial inclusion goals. The consistency and robustness of these findings across different models and methodologies further validate their reliability. They carry significant implications for policy development aimed at attaining the Sustainable Development Goals (SDGs) related to financial inclusion.

Based on the empirical findings, proposed policy agenda of this study aims to advance financial inclusion comprehensively. Development partners should formulate both short-term and long-term policies and strategies to allocate additional resources specifically for refugees to access financial services. While the adverse effects of aid for financial services on financial inclusion do not imply a reduction in commitment and disbursement of such aid (AFTFS), it is crucial to ensure good governance in its utilization. The targeted and sector-specific disbursement of aid for financial services, aligned with inclusive financial policies, can contribute to the achievement of Sustainable Development Goals (SDGs) in developing countries. To promote and facilitate financial inclusion for refugees and migrants, targeted investments and technical assistance are paramount. These individuals require guidance and support to navigate the financial systems in their host countries, while development partners also need guidance on effectively engaging with migrants and refugees. It is imperative for development partners to prioritize ensuring that refugees and vulnerable groups in host communities have access to affordable and suitable financial services, while holding responsible financial service providers accountable for delivering these services. Policymakers should also focus on raising awareness about the business opportunities linked to serving refugees and overcoming policy barriers that hinder their access to financial services. By addressing these challenges, stakeholders can foster greater financial inclusion and empowerment for refugees and migrants, contributing to their overall well-being and integration.

Overall, this research provides valuable insights into the relationship between FDPs, AFTFS, and financial inclusion. It underscores the importance of targeted aid and financial education programs in addressing the specific needs of forced displaced populations and promoting their financial inclusion. The findings call for collaborative efforts between donors, recipients, and policymakers to create an enabling environment that enhances access to financial services and supports the economic empowerment of vulnerable populations.

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Appendices

Table A1. List of developing countries and their ranking based on average CFII

Country Name	Average CFII (2004-21)	Ranking	Country Name	Average CFII (2004-21)	Ranking
Montenegro	56.646	1	Uzbekistan	46.095	38
Belarus	56.601	2	Dominican Republic	45.827	39
Mongolia	55.162	3	Ecuador	45.753	40
Serbia	53.852	4	Ukraine	45.588	41
Georgia	52.189	5	Honduras	45.117	42
Malaysia	52.166	6	Kyrgyz Republic	44.572	43
Moldova	52.157	7	Egypt, Arab Rep.	43.254	44
Bosnia and Herzegovina	51.605	8	Ghana	43.125	45
North Macedonia	51.548	9	India	42.450	46
Jordan	51.419	10	Algeria	42.163	47
Albania	50.995	11	Nicaragua	42.143	48
Thailand	50.982	12	Tajikistan	41.957	49
Lebanon	50.968	13	Zimbabwe	39.987	50
Brazil	50.800	14	Cambodia	39.717	51
China	50.512	15	Iraq	39.229	52
Costa Rica	50.475	16	Nigeria	38.959	53
Bolivia	50.461	17	West Bank and Gaza	38.937	54
South Africa	50.077	18	Kenya	38.416	55
Turkiye	49.899	19	Pakistan	37.783	56
Belize	49.863	20	Bangladesh	37.760	57
Armenia	49.609	21	Togo	37.745	58
Colombia	49.584	22	Lesotho	37.294	59
Guatemala	49.433	23	Nepal	36.952	60
El Salvador	49.050	24	Gambia, The	36.914	61
Argentina	48.752	25	Zambia	36.899	62
Namibia	48.208	26	Senegal	36.061	63
Botswana	48.149	27	Benin	35.619	64
Tunisia	48.110	28	Cameroon	34.827	65
Mexico	47.628	29	Congo	32.847	66
Kazakhstan	47.503	30	Uganda	31.430	67
Azerbaijan	47.263	31	Mozambique	30.670	68
Paraguay	47.254	32	Rwanda	29.243	69

Indonesia	46.751	33	Mali	28.835	70
Morocco	46.695	34	Madagascar	28.062	71
Philippines	46.644	35	Guinea	22.927	72
Peru	46.571	36	Central African Republic	22.710	73
Jamaica	46.560	37	Chad	16.726	74

Note: Average CFI and ranking of countries has been calculated by the author using PCA

Table A2. Principal components

Variables	Component	Eigenvalue	Difference	Proportion	Cumulative
	Comp1	2.621	1.767	0.524	0.524
nlnATM, nlnCBB, nlnOTD,	Comp2	0.854	0.238	0.171	0.695
	Comp3	0.616	0.101	0.123	0.818
nlnMCS, nlnMYS	Comp4	0.515	0.120	0.103	0.921
	Comp5	0.395		0.079	1.000

Note: Comp1 is the most important component, explaining the most meaningful patterns in the data

Table A3. Scoring estimates for orthogonal varimax rotation (weights)

Variable	Comp1	Unexplained
nlnATM	0.5157	0.3032
nlnCBB	0.4565	0.4539
nlnOTD	0.2957	0.7709
nlnMCS	0.4678	0.4266
nlnMYS	0.4685	0.4249