THE ROLE OF FINTECH GOVERNANCE IN ENHANCING FINANCIAL INCLUSION AND REDUCING INCOME INEQUALITY IN MENA COUNTRIES

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Abstract

This paper examines the effect of financial technology (FinTech) on financial inclusion (FIN) and income inequality; using data from the Global Findex Database (GFD) combined with macroeconomic and institutional indicators. The study employs a quantile regression model on panel data from 11 Middle Eastern and North African (MENA) countries to capture heterogeneous effects of FinTech and FIN across different levels of income inequality. The results show that FinTech adoption significantly reduces income inequality among lower- and middle-income groups, while its effect is insignificant for higher-income groups who already enjoy vast financial access. Moreover, FinTech affects income inequality indirectly by promoting FIN across all dimensions, including account ownership, savings, and borrowing. Additionally, the study reveals a non-linear relationship between financial development and income inequality, depicted as a U-shaped curve. Similarly, education, population growth, and institutional quality alleviate inequality, whereas trade intensity exacerbates it. The results are consistent with recent studies (Demir et al., 2022; Naili et al., 2023), which highlight the role of digital financial innovations in enhancing inclusion and reducing disparities. These findings have significant implications for MENA countries, indicating that acts to reduce income inequality should prioritise promoting FinTech innovation and enhancing FIN.

Keywords: Income Inequality, FinTech, Financial Inclusion, Financial Development, MENA

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1. INTRODUCTION

The Global Findex Database (GFD) released by the World Bank in 2021 shows that more than 1.7 billion people around the world lack access to essential financial services. A majority of this population lives in developing countries. In this context, financial technology (FinTech) is playing a critical role in modern financial services, as it can improve access to financial services for underbanked individuals and reduce the income gap. Naili et al. (2023) show that FinTech innovations promote financial inclusion (FIN) by allowing marginalized and low-income groups to access digital financial services.

The growth of FinTech is enabled by recent technological advances, excessive data availability, and the expanding demand for financial services. FinTech can improve access to financial services for underserved populations, including reducing income inequality (Hodula, 2023; Holtfort et al., 2021; Siddiqui & Rivera, 2022). Moreover, as FinTech expands, its potential to enhance FIN and reduce income inequality in developed and emerging markets becomes increasingly evident (Imeraj et al., 2025; Miftari et al., 2024; Alsaad et al., 2025; Naili et al., 2023; Jha & Dangwal, 2025). However, the interrelation among FinTech, FIN, and income inequality remains under-investigated (Demir et al., 2022; Girma & Huseynov, 2024). Hence, Girma and Huseynov (2024) stress the necessity for more comprehensive research on how FinTech and FIN can mitigate income inequality in regions facing severe challenges.

In the Middle Eastern and North African (MENA) region, FinTech may help increase access to formal financial services, as FIN efforts are still underdeveloped. Neaime and Gaysset (2018) contend that increased access to formal credit through FIN initiatives could play a vital role in reducing income inequality, particularly in developing economies suffering from high levels of income inequality. This study makes a significant contribution by extending the analysis of the FinTech—FIN—income inequality nexus in the MENA region. Moreover, incorporating a quadratic term for financial development reveals the non-linear relationship between finance and income inequality. The findings highlight the pivotal role of FinTech in enhancing FIN and reducing inequality, advocating the mediating role of FIN in reducing income inequality. Additionally, the study's use of quantile regression provides evidence of the effect of FinTech across different degrees of income inequality.

The remainder of the study is structured as follows. Section 2 reviews the related literature. Section 3 presents the data and methodology employed. Section 4 provides the results and discussion. Section 5 concludes the study and provides some research implications and future research recommendations.

2. LITERATURE REVIEW

Research shows that income inequality hinders economic growth by reducing investment and increasing growth volatility (Grigoli & Robles, 2017; Ncube et al., 2014; Selim & Güngör, 2021). Moreover, Devarajan et al. (2015) argue that income inequality is a crucial factor leading to social conflict and financial instability, specifically in the MENA region. Therefore, FinTech adoption may pave the path to enhance the income distribution, and addressing the income inequality problem is critical to ensuring sustainable economic growth (Ashford et al., 2020; van Niekerk, 2020; Suhrab et al., 2024; Bani Atta, 2025).

In general, financial development is considered to be the cornerstone of the battle against income inequality (Khatatbeh & Moosa, 2022). Acar and Dogruel (2012) argue that other factors may be identified as sources of income inequality, such as economic policies and a lack of national governance. Moreover, remittances have a double-edged effect as it can reduce poverty by providing extra income to households from abroad, while also contributing to rising income inequality by excessively depriving the local labour market of skilled workers (brain drain) and impeding economic development (Kratou & Khlass, 2022).

A new strand of literature shows that digital FinTechs, concomitant with financial development and inclusion, are crucial in lowering income inequality in developing country contexts (Jha & Dangwal, 2024; Naili et al., 2023; Adeoye et al., 2024). Neaime and Gaysset (2018) argue that access to formal credit is instrumental in reducing income inequality by offering more financial opportunities for the population. Ozili (2021) finds a positive effect of FIN on economic development, poverty reduction, and income inequality. Particularly, leveraging digital financial services such as e-payments, Insurtech, and online lending has the potential to provide affordable and accessible financial services for financially excluded individuals (Arner et al., 2015; Arner et al., 2020; Ediagbonya & Tioluwani, 2023; Odei-Appiah et al., 2022).

FinTech development has a substantial impact on the life standards of the lower-income groups who are financially excluded (Kim, 2016; Omar & Inaba, 2020; Suhrab et al., 2024; Yang & Zhang, 2022). These developments reduce income inequality, as populations with improved financial access can get financial help, save securely, and invest in business (Karanikolos et al., 2016; Park & Mercado, 2016). Afjal (2023) shows that integration of FinTech within the banking sector significantly improves the effectiveness and accessibility to financial services. He concludes that FinTech adoption accelerates the diffusion of digital FIN and helps bridge the gap between banked and unbanked populations. In this sense, FinTech innovations enhances income distribution by offering tailored, affordable services for low-income families that enable them to better manage finances, save, and access credit (Young & Young, 2022; Jaber et al., 2025).

Recent studies have deepened the understanding of the nexus between FinTech, FIN, and income inequality, offering new insights highly relevant to emerging and developing economies. For instance, Faqrurrowzi et al. (2025) critically review evidence from developing countries, concluding that FinTech reduces barriers to financial access but depends heavily on adequate digital infrastructure and supportive regulatory environments. Similarly, Ha et al. (2025) synthesize global findings, showing that FinTech fosters FIN by expanding digital payment

systems, mobile banking, and online credit, though the benefits are uneven across income groups. Moreover, Azmeh (2025) provides cross-country evidence that FinTech and FIN jointly moderate the relationship between globalization and inequality, reducing poverty and disparities when adopted in tandem with inclusive financial policies. In this sense, Magwedere and Marozva (2025) empirically demonstrate that FinTech adoption directly lowers income inequality in developing economies, especially through improved access to credit and savings products for marginalized groups. Collectively, these studies reinforce the notion that FinTech is not merely a technological innovation but a transformative mechanism for promoting equitable growth, while also underscoring the need for robust governance and policies to maximize its inclusive potential.

In parallel to the FinTech, FIN, and income nexus, many studies show that FIN mediates the FinTech-income inequality association (Chinoda & Mashamba, 2021; Ashenafi & Dong, 2022; Suhrab et al., 2024). In this context, literature suggests specific aspects of how FinTech can indirectly reduce income inequality through its effects on FIN and how FIN reduces inequality distribution. For example, Chinoda and Mashamba (2021) examine the impact of FinTech on FIN and income inequality across 25 African countries, emphasizing the significant role of FinTech in reducing income inequality. Similarly, Demir et al. (2022) find that FinTech reduces income inequality directly and indirectly through FIN, with significant effects

observed mainly in higher-income countries, as shown through a quantile regression analysis of 140 countries using Global Findex data. Aloulou et al. (2024) demonstrate that FinTech-related services increase the levels of FIN, helping to bridge the gap between the banked and unbanked populations and promoting greater economic prosperity and equity. Accordingly, governments and financial institutions should work together to remove barriers to financial access by providing affordable financial solutions such as FinTech solutions (Salampasis & Mention, 2018; Ashenafi & Dong, 2022; Mustafa et al., 2023; Mustafa, 2024).

3. DATA AND METHODOLOGY

The data utilised in the study are collected from 11 MENA countries (i.e., Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Tunisia, Turkey, the UAE, and Saudi Arabia) using the years available in the GFD (https://databank.worldbank.org/source/global-findex-database). We specifically chose these countries based on the availability of relevant data, including the Gini index. The sample includes a variety of economic and financial indicators from multiple databases that measure aspects such as income inequality, FinTech adoption, FIN, financial development, education, trade, population growth, gross domestic product (GDP), and institutional quality. The key variables we use are summarized in Table 1.

Table 1. Variables, measurement, and sources

Variables	Measurement	Sources
Income inequality	Measured using the Gini coefficient, which ranges from 0 (perfect equality) to 100 (perfect inequality).	Standardized World Income Inequality Database (SWIID)
FinTech	The percentage of individuals aged 15 and above who have made or received a digital payment.	Global Findex Database (GFD)
Financial inclusion (FIN)	Includes indicators such as account ownership at formal financial institutions, savings, and borrowing from formal financial institutions among individuals aged 15 and above: • Account: Having an account at a formal financial institution (% age 15+). • Saving: Saving at a formal financial institution (% age 15+). • Borrowing: Borrowing from a formal financial institution (% age 15+).	GFD
Financial development	Financial Development Index	International Money Fund
Education	Percentage of school enrolment, at secondary level (% gross).	World Development Indicators (WDI)
Trade	Trade as a percentage of GDP (%)	WDI
Population growth	Annual population growth (%)	WDI
GDPG	GDP per capita growth (constant 2010 US$)	WDI
INF	Inflation, consumer prices (annual %)	WDI
Institutional quality	Weighted average of the World Governance Indicators (WGI) data.	The author's calculations using data from WGI (World Bank)

Following previous literature (Demir et al., 2022; Altunbaş & Thornton, 2019), quantile regression is employed in this study to examine the impact of various independent variables on income inequality, as it provides a more comprehensive view of the relationship between the dependent and independent variables across different points in the distribution. The conditional quantiles of a dependent variable are expressed as linear functions of the explanatory variables (Rodriguez & Yao, 2017). Demir et al. (2022) argue that this method is effective in showing how the factors influencing income inequality might vary

across different quantiles (levels of income inequality). The quantile regression takes the form of a general linear model as follows:

$$Y_{i,t} = \alpha_0 + \alpha_1 X_{i,t} + u_{i,t} \qquad (1)$$

4. RESULTS AND DISCUSSION

To begin with, the descriptive statistics and pairwise correlations are exhibited in Table 3 and Table 4, respectively. The proxy of income inequality, the Gini index, has an average of 32.26 with a standard deviation of 15.86, indicating a wide

range of inequality across the sample countries. Similarly, *FinTec*h and *FIN* variables obtained from the GFD (Demirgüç-Kunt et al., 2018; Demirgüç-Kunt et al., 2022) show a wide disparity in adoption across countries. For example, Egypt has the lowest levels of account ownership and savings at formal financial institutions, whereas Algeria has the lowest borrowing rate from formal financial institutions. In contrast, the UAE boasts high account ownership and borrowing rates, whereas Kuwait exhibits the highest savings rates at formal financial institutions. In the same context, the UAE has the highest FinTech adoption rate, as 84% of individuals aged 15 and above are involved in digital payment.

Table 2. Descriptive statistics

Variables	Observations	Mean	Std. Dev.	Min	Max
Gini	33	32.26	15.86	0.64	48
FD	33	0.36	0.12	0.13	0.58
FinTech	33	0.42	0.24	0.08	0.84
Account	33	0.5	0.23	0.1	0.87
Saving	33	0.16	0.1	0.01	0.4
Borrowing	33	0.17	0.13	0.01	0.46
GDPG	33	3.42	3.25	-4.71	11.2
INF	33	4.6	5.36	-0.84	29.51
Trade	33	92.16	39.97	36.92	175.57
Population	33	8.88	21.6	-2.42	75.98
Education	33	86.43	20.33	35	112.98
INSTQ	33	-0.3	0.41	-0.92	0.67

The pairwise correlation matrix provided in Table 3 is crucial for identifying multicollinearity, which can distort the estimation of regression coefficients. A correlation coefficient above 0.8 typically signals potential multicollinearity (Kalnins, 2018). The analysis indicates high correlations between the FIN variables; therefore, these variables would not be included in the same model. The remaining variables exhibit correlations less than the suggested threshold, which indicates that multicollinearity does not pose a significant concern for our regression analysis. This result enhances the credibility of the subsequent empirical findings derived from our model.

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Gini	1.00											
(2) FD	-0.02	1.00										
(3) FinTech	-0.16	0.712*	1.00									
(4) Account	-0.21	0.670*	0.949*	1.00								
(5) Saving	-0.399*	0.500*	0.797*	0.851*	1.00							
(6) Borrowing	-0.18	0.641*	0.751*	0.772*	0.730*	1.00						
(7) GDPG	0.31	0.23	0.10	0.09	0.02	-0.15	1.00					
(8) INF	0.11	-0.15	-0.26	-0.28	-0.25	-0.11	0.18	1.00				
(9) Trade	-0.06	0.429*	0.602*	0.527*	0.611*	0.512*	-0.12	-0.466*	1.00			
(10) Population	-0.639*	0.28	0.32	0.406*	0.468*	0.22	-0.16	-0.08	0.06	1.00		
(11) Education	0.435*	0.30	0.567*	0.545*	0.33	0.34	0.26	-0.04	0.22	0.08	1.00	
(12) INSTQ	0.04	0.667*	0.600*	0.541*	0.461*	0.482*	0.10	-0.393*	0.748*	0.14	0.377*	1.00

Note: The asterisks indicate significance at 10%.

In our regression analysis, we employ a similar empirical approach outlined by Demir et al. (2022) to explore the nexus between FinTech, FIN, and income inequality. First, FIN is regressed to FinTech, aiming to investigate the potential role of FIN as a transmission channel for the impact of FinTech on income inequality. Following in Table 5, Table 6, and Table 7, the analysis is further extended to investigate the effect of FinTech and FIN on income inequality for each of the three FIN measures using quantile regression.

To begin with, Table 4 shows the pooled-OLS regression analysis examining the effect of FinTech adoption on FIN indicators (account ownership, savings, and borrowing). By and large, the results indicate a strong, statistically significant positive impact of FinTech on all dimensions of FIN. These findings align with the emerging literature, which posits that digital FinTechs facilitate easier access to financial services, particularly in developing countries where traditional banking infrastructure is often lacking (Agur et al., 2020; Telukdarie & Mungar, 2023; Khatatbeh & Abu Alfoul, 2024). In this sense, Al-Smadi (2023) and Kayed et al. (2025) argue that digital FinTechs enhance access to, availability of, and the use of financial services in the MENA region, thereby increasing overall FIN.

Table 4. The effect of financial technology on financial inclusion

Variables	(1) Account ownership	(2) Savings	(3) Borrowing
FD	1.316**	1.056***	1.397**
	(0.442)	(0.287)	(0.473)
FinTech	1.841***	0.845**	1.491**
	(0.509)	(0.330)	(0.545)
GDPG	0.002	0.011***	-0.008
	(0.005)	(0.003)	(0.005)
INF	0.011**	0.001	0.003
	(0.004)	(0.003)	(0.004)
Trade	-0.004**	-0.001	-0.001
	(0.001)	(0.001)	(0.002)
Population	0.003	-0.001	0.009
	(0.007)	(0.004)	(0.007)
Education	0.000	0.003*	0.003
	(0.002)	(0.002)	(0.003)
INSTQ	0.423***	0.061	0.097
	(0.134)	(0.087)	(0.143)
Cons	0.333	-0.471**	-0.637*
	(0.290)	(0.188)	(0.310)
R-squared	0.39	0.23	0.43

*Note: Standard errors in parentheses, the asterisks *, **, and *** show significance levels at 10%, 5%, and 1%, respectively.*

The results also reveal a significant positive effect of financial development on FIN across all dimensions. The results are consistent with previous literature that shows that a well-developed financial system reduces transaction costs and improves efficiency, thus enabling greater access to financial services for the public (Elgharib, 2024; Creane et al., 2006).

The primary regression analysis focuses on the nexus between FinTech, FIN, and income inequality presented in Table 5, Table 6, and Table 7. Specifically, we run quantile regression analyses to investigate the potential differential impact of FinTech and FIN on income inequality at different levels of income inequality (0.25, 0.5, 0.75, and 0.9). To avoid the issue of multicollinearity, we examine the measures of FIN separately. The results for the three dimensions of FIN: account ownership, borrowing, and savings, are detailed in Table 5, Table 6, and Table 7, respectively.

Table 5. The effect of financial technology and financial inclusion on income inequality (Account ownership)

Variables	(1) 0.25	(2) 0.5	(3) 0.75	(4) 0.9
FinTech	-70.943***	-56.072**	-20.564	-12.343
	(19.616)	(21.411)	(14.156)	(68.240)
Account	11.855	4.960	7.037	0.593
	(19.473)	(21.255)	(14.053)	(66.476)
FD	205.155**	278.713***	285.468***	267.271*
	(78.574)	(85.765)	(56.702)	(149.211)
FD²	-202.872	-300.694**	-362.858***	-333.127
	(118.183)	(128.998)	(85.285)	(224.284)
GDPG	-0.474	-0.434	-0.163	-0.308
	(0.446)	(0.487)	(0.322)	(0.734)
INF	-0.088	0.041	-0.216	-0.205
	(0.268)	(0.292)	(0.193)	(0.718)
Trade	0.162**	0.050	0.015	0.016
	(0.060)	(0.065)	(0.043)	(0.126)
Population	-0.374***	-0.455***	-0.521***	-0.566***
	(0.068)	(0.074)	(0.049)	(0.123)
Education	0.812***	0.851***	0.423***	0.376
	(0.098)	(0.107)	(0.071)	(0.250)
INSTQ	-13.455**	-9.824	-8.757*	-8.258
	(6.037)	(6.589)	(4.356)	(16.034)
Cons	-76.617***	-80.197***	-42.852***	-35.446
	(20.001)	(21.831)	(14.433)	(40.426)
R-squared	0.75	0.61	0.59	0.65

*Note: Standard errors in parentheses, the asterisks *, **, and *** show significance levels at 10%, 5%, and 1%, respectively. The dependent variable is income inequality measured by Gini index whereby 0 indicates perfect equality and 100 indicates perfect inequality; FinTech is percentage of individuals aged 15 and above who have made or received a digital payment; account, saving, and borrowing represent the dimensions of financial inclusion; FD and FD² are the linear and quadratic term of financial development; GDPG is GDP per capita growth; INF is inflation; Trade is the trade as a percentage of GDP; population is the annual population growth; education is the percentage of school enrolment at secondary level; INSTQ is the weighted average of the WGI.*

The results consistently show that FinTech significantly and negatively affects income inequality across the lower quantiles (0.25 and 0.5), suggesting that adopting FinTech contributes to reducing inequality for countries at the lower end of the income distribution. The results suggest that FinTech (e.g., mobile banking and digital payments) provides greater access to financial services for marginalized and low-income individuals. In contrast, the impact of FinTech on income inequality is not statistically significant at higher quantiles (0.75 and 0.9), which suggests that wealthier

individuals already have substantial access to traditional financial services — reducing the additional benefits of adopting FinTech. This is consistent with the findings of previous research (Chinoda & Mashamba, 2021; Emara & Mohieldin, 2020; Demir et al., 2022), which highlight how FinTech helps in promoting FIN and economic opportunities for lower and middle-income populations.

Table 6. The effect of financial technology and financial inclusion on income inequality (Borrowing)

Variables	(1) 0.25	(2) 0.5	(3) 0.75	(4) 0.9
FinTech	-58.303***	-37.598***	-9.599	-12.563
	(12.546)	(12.829)	(10.068)	(21.972)
Borrowing	-20.345	-35.095*	-31.868**	1.665
	(17.377)	(17.769)	(13.945)	(35.658)
FD	207.605**	249.305***	287.429***	262.792*
	(78.699)	(80.475)	(63.159)	(147.945)
FD²	-180.720	-273.336**	-349.213***	-325.698
	(119.538)	(122.237)	(95.934)	(227.504)
GDPG	-0.532	-0.519	-0.388	-0.281
	(0.507)	(0.518)	(0.407)	(0.594)
INF	0.081	-0.044	-0.130	-0.206
	(0.287)	(0.294)	(0.231)	(0.453)
Trade	0.144**	-0.000	0.089*	0.015
	(0.064)	(0.065)	(0.051)	(0.090)
Population	-0.366***	-0.429***	-0.539***	-0.564***
	(0.068)	(0.069)	(0.054)	(0.108)
Education	0.814***	0.733***	0.461***	0.373
	(0.103)	(0.105)	(0.082)	(0.329)
INSTQ	-12.303*	0.642	-11.492**	-8.379
	(6.347)	(6.490)	(5.093)	(11.466)
Cons	-74.882***	-54.416**	-52.081***	-34.633
	(19.666)	(20.110)	(15.783)	(47.523)
R-squared	0.75	0.64	0.58	0.65

*Note: Standard errors in parentheses, the asterisks *, **, and *** show significance levels at 10%, 5%, and 1%, respectively. The dependent variable is income inequality measured by Gini index whereby 0 indicates perfect equality and 100 indicates perfect inequality; FinTech is percentage of individuals aged 15 and above who have made or received a digital payment; account, saving, and borrowing represent the dimensions of financial inclusion; FD and FD² are the linear and quadratic term of financial development; GDPG is GDP per capita growth; INF is inflation; Trade is the trade as a percentage of GDP; population is the annual population growth; education is the percentage of school enrolment at secondary level; INSTQ is the weighted average of the WGI.*

In Table 6, we found that borrowing has a significant negative effect on income inequality exclusively at quantiles (0.5 and 0.75). This suggests that borrowing might not have the same impact on reducing inequality for both highly affluent groups who need no borrowing from formal financial institutions as they already have adequate access to capital or credit and lower-income individuals who face obstacles in obtaining formal credit (Turegano & Herrero, 2018; Jha & Dangwal, 2025; Abu Alfoul et al., 2024). Prior researches (Naili et al., 2023; Elgharib, 2024) support this conclusion by demonstrating that FIN, through official borrowing channels, offers vital funds for investments in household upgrades, entrepreneurship, and education, which can help people escape financial vulnerability.

In regard to financial development, the results show that the linear coefficient of financial development (FD) is positive and significant, whereas the quadratic coefficient (FD²) is negative and significant. This suggests a non-linear relationship between financial development and income inequality in the form of an inverted U-curve. This indicates that the effects of financial development in reducing inequality are effective only after a certain threshold has been reached (Khatatbeh & Moosa, 2023; Khatatbeh et al., 2022). The remaining results of the control variables show that the trade percentage of GDP (*Trade*) increases income inequality. In contrast, population growth (*Population*), secondary school enrolment (*Education*), and institutional quality (*INSTQ*) are critical determinants of alleviating income inequality in the MENA region. These results are consistent with the previous literature (Ozili, 2021; Khatatbeh, 2019; Furceri & Ostry, 2019; Khatatbeh & Moosa, 2022).

Table 7. The effect of financial technology and financial inclusion on income inequality (Savings)

Variables	(1) 0.25	(2) 0.5	(3) 0.75	(4) 0.9
FinTech	-61.354***	-46.351***	-12.310	-11.608
	(13.055)	(14.451)	(9.812)	(22.386)
Saving	4.558	-0.907	-12.612	-2.141
	(25.500)	(28.228)	(19.167)	(41.701)
FD	195.316**	282.607***	285.964***	258.677**
	(76.498)	(84.680)	(57.500)	(93.215)
FD²	-190.822	-328.979**	-357.324***	-319.517*
	(113.830)	(126.004)	(85.560)	(160.295)
GDPG	-0.373	-0.112	-0.247	-0.311
	(0.455)	(0.503)	(0.342)	(0.555)
INF	-0.207	0.023	-0.229	-0.198
	(0.263)	(0.291)	(0.198)	(0.401)
Trade	0.143**	0.017	0.042	0.023
	(0.066)	(0.074)	(0.050)	(0.100)
Population	-0.369***	-0.447***	-0.534***	-0.568***
	(0.074)	(0.082)	(0.055)	(0.110)
Education	0.800***	0.824***	0.432***	0.370*
	(0.100)	(0.111)	(0.075)	(0.214)
INSTQ	-11.951*	-4.652	-10.744**	-8.537
	(6.115)	(6.769)	(4.596)	(11.672)
Cons	-70.071***	-72.599***	-45.126***	-34.216
	(18.781)	(20.790)	(14.117)	(29.456)
R-squared	0.74	0.61	0.58	0.65

Note: Standard errors in parentheses, the asterisks *, **, and *** show significance levels at 10%, 5%, and 1%, respectively. The dependent variable is income inequality measured by the Gini index whereby 0 indicates perfect equality and 100 indicates perfect inequality; FinTech is a percentage of individuals aged 15 and above who have made or received a digital payment; account, saving, and borrowing represent the dimensions of financial inclusion; FD and FD² are the linear and quadratic term of financial development; GDPG is GDP per capita growth; INF is inflation; Trade is the trade as a percentage of GDP; population is the annual population growth; education is the percentage of school enrolment at secondary level; INSTQ is the weighted average of the WGI.

5. CONCLUSION

This study examines the nexus between FinTech, FIN, and income inequality in 11 MENA countries, using survey data from the GFD. The baseline results show that FinTech's contribution to reducing income inequality is mediated through its positive impact on FIN, particularly in increasing access to formal banking services such as borrowing, savings, and account ownership. Nevertheless, only borrowing from formal financial institutions significantly reduces inequality at middle quantiles, reflecting the role of formal credit access in improving financial stability and economic opportunities for middle-income groups.

The main results, obtained using a quantile regression model, reveal that FinTech adoption significantly reduces income inequality, particularly among the lower- and middle-income groups. In contrast, the effect of FinTech on income disparity decreases and becomes statistically insignificant at higher income quantiles, suggesting that the additional benefits of FinTech for wealthier income groups may be less since they already have substantial access to financial services. The findings also reveal a non-linear relationship between financial development and income inequality, depicted by an inverted U-shape curve.

These findings have significant implications for MENA countries, indicating that acts to reduce income inequality should prioritize promoting FinTech innovation and enhancing FIN. To optimize FinTech's potential in mitigating economic inequities in the region, policymakers should concentrate on developing digital infrastructure, encouraging financial literacy, and implementing equitable regulatory frameworks. Future studies might focus on expanding this research to look at how FinTech-related services affect poverty and income inequality at the individual level and the characteristics that mediate these effects, particularly for middle and lower-income populations. Moreover, studies may examine the factors affecting behavioural intention to use and the actual adoption of lending-related FinTech services and their impact on inequality.

This study had several limitations. First, the analysis relies on aggregated national-level data from eleven MENA countries, which may obscure intra-country disparities and heterogeneity across demographic and regional segments. Second, FinTech adoption was measured primarily through digital payment indicators obtained from the GFD, which may not fully capture the broader dimensions of FinTech, such as InsurTech, RegTech, or decentralised finance. Third, the limited time coverage (2011, 2014, and 2017) constrains the ability to assess the long-term dynamics or impact of post-COVID-19 FinTech developments. Finally, while the quantile regression approach accounts for heterogeneity across income inequality levels, potential endogeneity issues between FinTech adoption and income inequality cannot be entirely eliminated.

Future research can extend the present analysis in several ways, as follows. First, employing micro-level household or firm-level data would provide deeper insights into how FinTech usage affects income distribution at the individual or sectoral level. Second, future studies should incorporate post-2020 data to explore how the rapid acceleration of digital finance during and after the COVID-19 pandemic reshaped financial inclusion and inequality patterns. Third, cross-regional comparisons between MENA and other developing regions (e.g. Sub-Saharan Africa or Southeast Asia) could reveal the contextual factors that enhance or constrain the inclusive potential of FinTech. Finally, integrating institutional and behavioural dimensions, such as digital trust, consumer protection, and FinTech literacy, would enrich the understanding of FinTech governance mechanisms and their role in fostering equitable and sustainable financial ecosystems.

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