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FINANCIAL DEVELOPMENT AND INCOME INEQUALITY: EVIDENCE FROM THAILAND

Pitipat Nittayakamolphun[1], Norachit Jirasatthumb[2,*], and Panjamapon Pholkerd[3]

Abstract

Despite experiencing persistent income inequality, the Thai economy has continued to grow with a developing financial system. This study examines the relationship between financial development and income inequality in Thailand from 1980 to 2020. It is identified that a cointegration between financial development and income inequality follows a U-shape hypothesis. This result implies that income inequality reduced to a certain threshold in the early stage of financial development but subsequently increased as the financial system progressed. It is consequently recommended that policymakers prioritize creating an inclusive financial environment that promotes equitable access to financial services across all financial institutions, particularly for lower- and middle-income groups.

Keywords: Financial development, Income inequality, Thailand

JEL Classification: D31, O15, O16

1. INTRODUCTION

Financial development is crucial for economic progress in both developing and developed countries (Guru & Yadav, 2019; Sanaphanh & Sethapramote, 2021). The transmission of financial developments in both the money market and the capital markets has been widely studied, both theoretically and empirically (Goldsmith, 1969; Levine, 1997; Beck et al., 2014; Osei & Kim, 2023). Increased economic growth, however, does not ensure the well-being of everyone in the country. In other words, income inequality exists. Income inequality is an issue of great interest and debate in all countries around the globe (Kilenthong, 2016). However, previous studies have indicated that financial developments are often an underappreciated factor in reducing income inequality (Sehrawat & Giri, 2015; Nguyen et al., 2019).

The association between financial development and income inequality remains inconclusive. According to Greenwood and Jovanovic (1990), income inequality rises in the early stages of financial development and falls as financial development advances, forming an inverted U-shape. This U-shape form is similar to that found by Kuznets (1955), but the latter describes inequality in relation to GDP per capita rather than financial development. The U-shape hypothesis is widely accepted (Koçak & Uzay, 2019; Destek et al., 2020; Kavya &

[1] Asst. Prof. Dr. Pitipat Nittayakamolphun is currently working as a lecturer at Faculty of Management Sciences, Buriram Rajabhat University, Thailand. He obtained a Ph.D. in Applied Economics from Maejo University, Thailand. Email: pitipat.ni@bru.ac.th

[2,*] Assoc. Prof. Dr. Norachit Jirasatthumb (corresponding author) is currently working as a lecturer at Faculty of Economics, Khon Kaen University, Thailand. He obtained a Ph.D. in Political Economy from The University of Sydney, Australia. Email: norachitji@kku.ac.th

[3] Dr. Panjamapon Pholkerd is currently working as a lecturer at Faculty of Management Sciences, Buriram Rajabhat University, Thailand. She obtained a D.B.A. in Marketing Strategy from Sripatum University, Thailand. Email: panjamaporn.ph@bru.ac.th

Shijin, 2020). However, Piketty (2014) disagreed, arguing that the gap of earnings would never converge as long as the return from assets continues to grow higher than economic (income) growth. It is noted that Piketty did not point out any important roles of financial development, unlike others who asserted that it could help mitigate income inequality (Beck et al., 2007; Shahbaz & Islam, 2011; Chiu & Lee, 2019; Thornton & Tommaso, 2020). The issue of whether development of the financial system could improve the inequality situation is still debatable. Kunieda et al. (2014) and De Haan and Sturm (2017) suggested that financial development can increase income inequality, but that its effect on inequality is inconsistent. Altunbaş and Thornton (2019) argued that the different effects of inequality rely on the income level of each country, while Bahmani-Oskooee and Zhang (2015) asserted that its impact does not differ between lower middle-income and high-income countries. For the specific case of Thailand, Jeong and Townsend (2008), Kilenthong (2016), Azam and Raza (2018) and Ridzuan et al. (2021) supported the hypothesis of an inverted U-shape relationship.

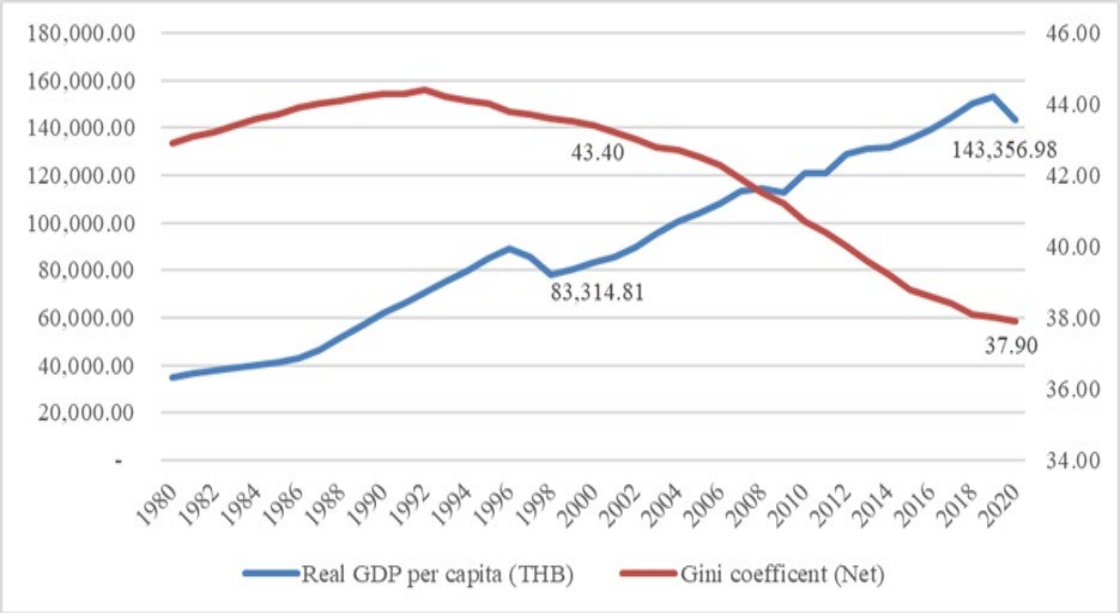

Figure 1 Real GDP per capita and Gini coefficient (Net)
Source: Solt (2020) and World Bank (2022)

Figure 1 demonstrates that Thailand's economy has grown steadily over the last two decades, with an average income per capita of THB 83,315 in 2000 rising to THB 143,357 in 2020 (72.07%). However, the Gini coefficient, which serves to assess income inequality, has decreased from 43.40 in 2000 to 37.90 in 2020 (14.51%). During the same timeline the Financial Development Index[4] also rose from 0.4348 in 2000 to 0.7372 in 2020. (68.14%) (International Monetary Fund: IMF, 2022). It can be said that Thailand is in an unimproved situation of income inequality. The country was ranked the fourth in ASEAN in terms of income inequality, after Indonesia, Laos, and Cambodia, with the top 10% of the population accounting for 48.79% of total income (Global Finance, 2022). One possible explanation is that low-income people may not gain proportionate access to finance and financial services as the index of financial development rises. However, income inequality depends on various factors viz., demography, macroeconomy, politics, culture, and environment (De Haan & Sturm, 2017; Jeong & Kim, 2018; Rachmawati et al., 2021; Dustmann et al., 2022).

Over the last decade, there have been few studies examining the case of Thailand and

[4] An aggregate index of financial institutions index and financial markets index (see, e.g. IMF, 2022)

investigating the role of financial development and income inequality, except only Kilenthong (2016) and Ridzuan et al. (2021). These studies did not include other factors, particularly the capital market and money market. Therefore, this study aims to broaden perspectives on the topic by exploring the link between financial development and income inequality in Thailand while taking market capitalization, the credit market and other macroeconomic variables into account for a more precise conclusion. The expected contribution of the study is to enable policymakers to employ a guideline in supervising money and capital markets and in regulating macroeconomic factors for the sake of narrowing income inequality.

2. LITERATURE REVIEW

The relationship between financial development and economic performance, especially economic growth is controversial due to the indeterministic nature of its causality direction (Choong & Chan, 2011). The direction of causality shapes how development policy should be pursued. Finance-led-growth causality suggests the orientation of policy towards a liberalized financial sector, while growth-led-finance causality demands growth-enhancing policies (Calderon & Liu, 2003). Although, the causality direction remains unobvious, a conclusive observation can be drawn that there is a first-order relationship between financial development and economic growth. Therefore, policy makers should emphasize how to create a favorable regulatory environment that fosters a functioning financial sector (Levine, 1999).

The impact of financial advancements on income inequality also has no consensus (Demirgüç-Kunt & Levine, 2009). Amidst the debatable issues, the hypothesis of an inverted U-shape has received considerable attention. Greenwood and Jovanovic (1990) hypothesized that financial progress and income inequality are related in an inverted U-shape because of the fragile financial structure in which the benefit from financial development can be only enjoyed by the rich. Kavya and Shijin (2020) also observed an inverted U-shape, but only in the case of high-income countries. The evidence of inverted U-shape has also been found in the case of lower-middle income countries such as Turkey (Koçak & Uzay, 2019; Destek et al., 2020), Malaysia, and Thailand (Azam & Raza, 2018; Ridzuan et al., 2021), African countries (before the year 2000) (Zungu et al., 2022), emerging countries (Nguyen et al., 2019), and the BRICS countries (Younsi & Bechtini, 2020).

Nevertheless, the inverted U-shape hypothesis is not always accurate. Sehrawat and Giri (2015) rejected the inverted U-shape hypothesis, concluding that financial development and income inequality are in a linear relationship. Financial development, according to Shahbaz and Islam (2011), reduced income inequality in Pakistan in the long run. This is consistent with the findings of Thornton and Tommaso (2020), who argued that financial development contributed to lower income inequality in 119 countries ranging from high to low income. These studies supported the finance-inequality narrowing from Galor and Zeira (1993). In the case of African countries, income inequality in high-income countries shrank as their financial development improved (Bolarinwa et al., 2021). According to Chiu and Lee (2019), financial development could reduce income inequality only in high-income countries while promoting inequality in low-income countries.

Several research studies have shown that financial developments have exacerbated income inequality, corroborating the hypothesis of De Gregorio (1996), which explains that only the rich can gain access to and benefit from financial development (cf., Kunieda et al., 2014; Bahmani-Oskooee & Zhang, 2015; Altunbaş & Thornton, 2019). The negative impact of financial development on income inequality is related to the degree of political institutions (De Haan & Sturm, 2017). They also hypothesized that financial development and income inequality are in U-shape. According to Mbona (2022), financial development reduced income inequality to a certain threshold, and income inequality intensified when financial development

occurred above that threshold. This idea is supported by studies in 35 developing countries (Tan & Law, 2012), including Indonesia and the Philippines (Ridzuan et al., 2021). Findings from Zungu et al. (2022) showed that financial development and income inequality in 21 African countries possessed U-shape nonlinear relationships. The same result was observed in Kazakhstan (Shahbaz et al., 2017) and Jordan (Khatatbeh et al., 2022).

There are several sources shaping the development of financial system viz., the money market (De Haan & Sturm, 2017; Zungu et al., 2022) and capital market (Rachmawati et al., 2021). Many studies have included both factors making a comparison with financial development (see, e.g., Azam and Raza, 2018; Jeong & Kim, 2018; Chiu & Lee, 2019; Nguyen et al., 2019; Destek et al., 2020; Younsi & Bechtini, 2020). In this topic, a financial development index is an indispensable indicator. Altunbaş and Thornton (2019) used the index to assess 121 countries ranging from high to low income. Thornton and Tommaso (2020) applied the same indicator for the study in 119 countries. Kavya and Shijin (2020) employed it in 85 countries globally. However, financial developments are not the only factor affecting income inequality. Economic growth, for example, also pushes a level of income inequality in India (Sehrawat & Giri, 2015) and Thailand (Ridzuan et al., 2021), but otherwise collapses the level of income inequality, such as in Turkey (Koçak & Uzay, 2019) and 35 other developing countries (Tan & Law, 2012).

According to Chiu and Lee (2019), inflation had a major role in expanding income inequality in 59 high- and low-income countries, as well as BRICS countries (Younsi & Bechtini, 2020). Based on Altunbaş and Thornton (2019), inflation reduced income inequality in high-income countries, such as Japan and lower middle-income countries, such as Kenya (Bahmani-Oskooee & Zhang, 2015). Government spending has also been shown to exacerbate income inequality in 21 emerging economies (Nguyen et al., 2019). On the other hand, low-income countries were not budged with government spending (Kavya & Shijin, 2020), and the same applied to 120 countries globally (Mbona, 2022).

This study considers relevant macroeconomic factors using an autoregressive distributed lag (ARDL) by Pesaran et al. (2001) to analyze the cointegration. The approach is highly flexible, as it is not necessary to test the level of data stationery in each variable. The approach was used extensively to study the cointegration in a nonlinear manner to test the inverted U-shape hypothesis in Bahmani-Oskooee and Zhang (2015), Shahbaz et al. (2017), Destek et al. (2020), Sehrawat and Giri (2015), and Ridzuan et al. (2021). To fulfill previous empirical findings and cover the financial market as a driver of the national economy, therefore, we apply ARDL to analyze the relationship between financial development and income inequality in Thailand, testing the inverted U-shape hypothesis. Figure 2 shows the conceptual framework for this study.

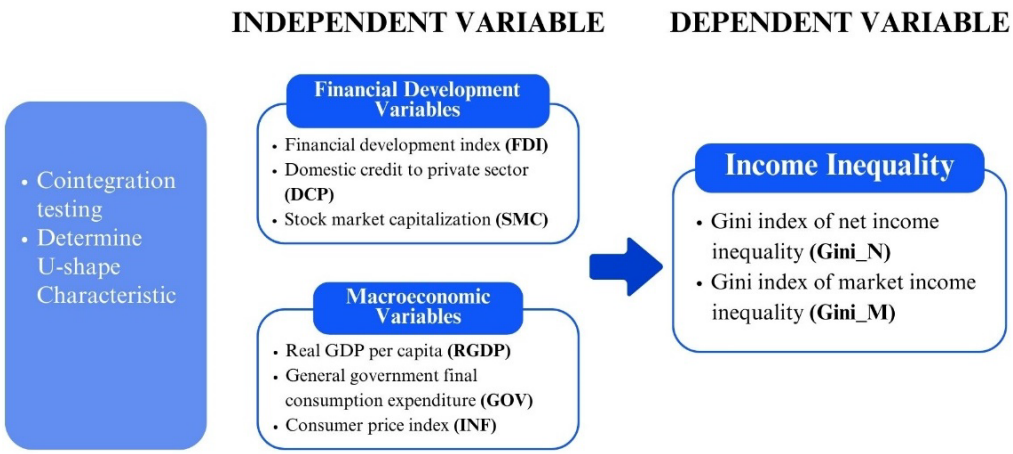

Figure 2 Conceptual Framework

3. DATA AND METHODOLOGY

3.1 Data

To depict income disparity, we used the data of Gini coefficient from the Standardized World Income Disparity Database (SWIID) by Solt (2020), which displayed household income before and after taxes and remittances. A similar concept was used by Chiu and Lee (2019), Nguyen et al. (2019), Kavya and Shijin (2020), and Mbona (2022). This study utilizes data from 1980 to 2020, providing an examination of general financial developments, money markets, capital markets, and macroeconomic indicators, taken from the IMF and World Development Indicators (WDI) of the World Bank as described in Table 1.

Table 1 Data and Source

Variables	Symbol	Definition	Source
Income inequality	Gini_N	Gini index of net income inequality (post-tax, post-transfer income)	SWIID
	Gini_M	Gini index of market income inequality (pre-tax, pre-transfer income)	SWIID
Financial Development	FDI	Financial development index	IMF
	DCP	Domestic credit to private sector (% of GDP)	WDI
	SMC	Stock market capitalization (% of GDP)	WDI
Macroeconomic	RGDP	Real GDP per capita	WDI
	GOV	General government final consumption expenditure (% of GDP)	WDI
	INF	Consumer price index	WDI

Table 1 describes relevant variables used in this study. The financial development encompasses key aspects, including the depth, access, and efficiency of financial markets and institutions (c.f., Altunbas & Thornton, 2019; Thornton & Tommaso, 2020). While this index is comprehensive, it lacks the ability to address a specific dimension. It is therefore necessary to add ratios of GDP to domestic credit and stock market capitalization as proxies representing the depth of financial sector (c.f., De Haan & Sturm, 2017; Khatatbeh et al., 2022). Proxies representing access and efficiency should ideally have been incorporated into the study, but this was not feasible due to the limitation of data sources.

Data used in the analysis were gathered in the form of growth rate. Table 2 displays the descriptive statistics, where only income inequality has a negative average. The data unit root as tested by the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) methods shows that every variable held different levels of data stationarity both I(0) and I(1) (Table 3).

Table 2 Descriptive Statistics

Variables	Average	S.D.	Max	Min
Gini_N	-0.3082%	0.4790%	0.4662%	-1.2136%
Gini_M	-0.3060%	0.4590%	0.4367%	-1.1390%
FDI	2.6011%	10.5234%	39.3729%	-23.6409%
FDI^2	6.3496%	22.9587%	94.2480%	-41.6928%
DCP	3.8352%	8.5405%	19.6335%	-17.6915%
DCP^2	8.5287%	17.4305%	43.1217%	-32.2530%

Table 2 (Continued)

Variables	Average	S.D.	Max	Min
SMC	15.6424%	42.4819%	149.5505%	-56.0305%
SMC^2	51.3276%	121.4682%	522.7546%	-80.6668%
RGDP	3.6559%	3.9431%	11.3117%	-8.7651%
GOV	1.0506%	4.8572%	11.4217%	-11.2921%
INF	3.1906%	2.6730%	12.6630%	-0.9004%

Note. All variables represent the growth rate

Table 3 Unit Root Tests

Variables	ADF		PP		Conclusion
	Level	First diff.	Level	First diff.	
Gini_N	-0.6209	-10.5345***	-2.8330	-11.1508***	I(1)
Gini_M	-1.3138	-8.5378***	-1.0431	-8.6551***	I(1)
FDI	-8.1351***	-6.2949***	-23.7596***	-38.8220***	I(0)
FDI^2	-5.6781***	-4.6133***	-20.6113***	-37.6770***	I(0)
DCP	-3.6115**	-7.9098***	-3.6115**	-10.1945***	I(0)
DCP^2	-3.8245**	-8.1973***	-3.8033**	-10.8314***	I(0)
SMC	-6.8931***	-6.4518***	-6.9493***	-32.7945***	I(0)
SMC^2	-6.9305***	-6.7661***	-7.0589***	-30.9229***	I(0)
RGDP	-3.3847*	-6.8423***	-3.3855*	-7.5619***	I(1)
GOV	-3.4219*	-6.6152***	-3.4181*	-7.0667***	I(1)
INF	-5.3882***	-8.9774***	-5.3994***	-9.3555***	I(0)

Note. *p<.10, **p<.05, ***p<.01, Unit root tests included intercept and trend of all series.

3.2 Econometrics Model

The inverted U-shape hypothesis of Greenwood and Jovanovic (1990) was applied as follows:

$$IE_t = \alpha_0 + \alpha_1 FD_t + \alpha_2 FD_t^2 + \alpha_3 RGDP_t + \alpha_4 GOV_t + \alpha_5 INF_t + \varepsilon_t \quad (1)$$

Where IE_t is income inequality, FD_t is financial development, FD_t^2 is the square of financial development, $RGDP_t, GOV_t$ and INF_t are the macroeconomic factors, and ε_t is the residual. $\alpha_1 > 0$ and $\alpha_2 < 0$ are given according to the inverted U-shape hypothesis. However, if $\alpha_1 < 0$ and $\alpha_2 > 0$ then financial development and income inequality follow a U-shape relationship. In the case of a linear relationship, $\alpha_2 = 0$, while if $\alpha_1 < 0$, a finance-inequality narrowing hypothesis is confirmed. In contrast, when $\alpha_1 > 0$ then the finance-inequality widening hypothesis is confirmed. The six models classified by the Gini coefficient and financial development were applied as shown in Table 1.

The inversed-U shape hypothesis of financial Kuznets curve was tested using equation (1). The following equation is the first-order derivative of equation (1) with respect to *FD* which verifies the threshold, or in the other words, the turning point of the curve (Baiardi & Morana, 2016; Khatatbeh et al., 2022).

$$FD = -\frac{\alpha_1}{2\alpha_2} \quad (2)$$

3.3 Cointegration

To analyze the variables with I(0) or I(1) property, the ARDL or bound test of Pesaran et al. (2001) was applied. This is an effective approach with a small amount of data (Table 3). The following is the first cointegration equation for ARDL.

$$\Delta IE_t = \gamma_0 + \sum_{i=1}^{p} \gamma_i \Delta IE_{t-i} + \sum_{j=0}^{q_1} \beta_{1j} \Delta FD_{t-j} + \sum_{j=0}^{q_2} \beta_{2j} \Delta FD_{t-j}^2 + \sum_{j=0}^{q_3} \beta_{3j} \Delta RGDP_{t-j} + \sum_{j=0}^{q_4} \beta_{4j} \Delta GOV_{t-j}$$
$$+ \sum_{j=0}^{q_5} \beta_{5j} \Delta INF_{t-j} + \lambda_0 IE_{t-1} + \lambda_1 FD_{t-1} + \lambda_2 FD_{t-1}^2 + \lambda_3 RGDP_{t-1} + \lambda_4 GOV_{t-1} + \lambda_5 INF_{t-1} + u_t \quad (3)$$

Where γ_0 is constant , γ_i is the coefficient, β is the vector of the short-run coefficient, λ is the vector of the long-run coefficient, and u_t is the residual (white noise), when p and q are the lag lengths. The optimal lag length with the lowest Schwarz information criterion (SIC) was selected. The F statistic is used to test the cointegration by comparing the critical value of Pesaran et al. (2001). When data is under 100 the critical value of Narayan (2005) will be applied. The hypotheses of the cointegration tests are:

$$H_0 : \lambda_0 = \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0 \text{ (no cointegration)}$$
$$H_1 : \lambda_0 \neq \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq 0 \text{ (cointegration)}$$

Next, the Error Correction Model (ECM) was used for the speed adjustment. Thus, the combination of ARDL and ECM can be presented as follows:

$$\Delta IE_t = \gamma_0 + \sum_{i=1}^{p} \gamma_i \Delta IE_{t-i} + \sum_{j=0}^{q_1} \beta_{1j} \Delta FD_{t-j} + \sum_{j=0}^{q_2} \beta_{2j} \Delta FD_{t-j}^2 + \sum_{j=0}^{q_3} \beta_{3j} \Delta RGDP_{t-j}$$
$$+ \sum_{j=0}^{q_4} \beta_{4j} \Delta GOV_{t-j} + \sum_{j=0}^{q_5} \beta_{5j} \Delta INF_{t-j} + \lambda(ECT_{t-1}) + u_t \quad (4)$$

When ECT_{t-1} is the error correction term and λ is the speed adjustment coefficient.

4. RESULTS AND DISCUSSION

ARDL was used to analyze the cointegration. Table 4 panel A displays the cointegration and optimal lag length of the six models. The post-tax income inequality, represented by Gini_N, was applied in model 1-3, while pre-tax income inequality, or Gini_M was applied in model 4-5. There were different proxy variables in each model: financial development index (FDI) in model 1 and 4, domestic credit to the private sector (DCP) in model 2 and 5, and stock market capitalization (SMC) in model 3 and 6. Table 4 Panel B displays the diagnostic tests. There was no evidence of a serial correlation problem as shown by the insignificant value of the LM test (Serial). The Breusch-Pagan-Godfrey test shows no presence of heteroskedasticity (Hetero). The Jarque-Bera test confirmed the normality of the residuals (Normal). All models passed the Ramsey regression equation specification error test (RESET) and demonstrated

stability according to the cumulative sum of the recursive residuals (CUSUM) and CUSUM of the square (CUSUMSQ). Thus, the coefficient and variance of the error in the model were found to be stable.

Table 4 ARDL Cointegration and Diagnostic Tests

Model	Gini_N			Gini_M		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Panel A: Cointegration						
Lag order	2,4,2,0,0,2	2,0,2,0,0,3	3,4,2,4,4,3	1,4,0,1,0,2	1,0,1,0,0,3	1,0,0,0,0,2
F-Statistic	8.5337***	7.7561***	2.0625	10.7059***	11.1644***	11.4707***
Critical values	I(0) 10%	I(1) 10%	I(0) 5%	I(1) 5%	I(0) 1%	I(1) 1%
	2.483	3.708	2.962	4.338	4.045	5.898
Conclusion	Present	Present	Absent	Present	Present	Present
Panel B: Diagnostics tests						
Serial	0.0590	0.8850	2.9688	0.6034	0.1797	1.7190
	(0.9429)	(0.4269)	(0.1165)	(0.5566)	(0.8367)	(0.1983)
Hetero	0.2988	1.0320	0.7087	0.3348	0.9240	0.4370
	(0.9896)	(0.4530)	(0.7638)	(0.9772)	(0.5273)	(0.8889)
Normal	4.6206	0.3898	0.9767	0.4375	0.1151	0.7397
	(0.0992)	(0.8229)	(0.6136)	(0.8035)	(0.9441)	(0.6908)
Ramsey	0.0103	0.0575	0.1347	1.7863	0.3733	0.0353
	(0.9201)	(0.8127)	(0.7231)	(0.1957)	(0.5467)	(0.8524)
CUSUM	Stable	Stable	Stable	Stable	Stable	Stable
CUSUMQ	Stable	Stable	Stable	Stable	Stable	Stable

Note. *p<.10, **p<.05, ***p<.01 and diagnostic test p-values are given in parentheses. The critical values from Narayan (2005)

The cointegration in Table 5 Panel B (Model 1) displays a significant U-shape relation between the financial development index (FDI) and income inequality (Gini_N), while the other model showed no significance. In the case of Thailand, stock market capitalization (SMC) and domestic credit to the private sector (DCP) may not represent good financial development which is consistent with a former study of 120 high-income to low-income counties by Mbona (2022). When considering the baseline model with Model 1, it is possible that financial development would lower income inequality, which is consistent with the study of 119 countries by Thornton and Tommaso (2020) and of 40 African countries by Bolarinwa et al. (2021). Chiu and Lee (2019) concluded that income inequality in high-income countries reduces when financial development improves. Similar conclusions have been found in upper-middle-income countries such as Thailand. Surprisingly, increased financial development may exclude the poor in Thailand, leading to an increase in income inequality. The findings corroborate the U-shape hypothesis and are consistent with various earlier studies, including research conducted in 21 African countries (Zungu et al., 2022), a study in Kazakhstan as an upper-middle-income country like Thailand (Shahbaz et al., 2017) and a study in Indonesia and the Philippines (Ridzuan et al., 2021). The findings contrast with observations of an inverted U-shape in Thailand (see, e.g., Kilenthong, 2016; Azam & Raza, 2018; Ridzuan et al., 2021).

The Real GDP per capita (RGDP) or economic growth can significantly reduce the income inequality except in models 2, 3, and 6. Likewise, inflation (INF) reduces income inequality significantly except for models 3 and 6 (Table 5 Panel B). In the baseline model (Model 1), as a country's economy grows, average population income rises, resulting in lower income inequality. This finding is coherent with a studies in Turkey by Koçak and Uzay (2019) and Destek (2020), as well as 35 developing countries (Tan & Law, 2012). The General Government Final Consumption Expenditure (GOV) was not found to affect income inequality, in accordance with Jeong and Kim (2018) who studied 174 countries and Mbona (2022) who studied 120 countries globally. Income inequality could rise because of demand pull inflation due to higher average population incomes. According to Altunbaş and Thornton (2019), inflation and income inequality may have a negative association exclusively in high-income countries. This study has drawn a similar conclusion for Thailand as a upper-middle-income country, as did Bahmani-Oskooee and Zhang (2015) for Kenya as a lower-middle-income country.

Table 5 Panel A shows the short run relationship between financial development and income inequality, including speed adjustment. All models showed a statistical significance of speed adjustment in the error correction models (ECT), except model 3. The results of Model 1 confirm the U-shape character. The level of threshold acquired from equation (2) was 1.13%, which was less than its average value of FD (2.6011% in Table 3). Figure 3 shows the U-shape character, indicating that as the financial system develops, income inequality may initially reduce but later increase. The threshold distinguishes the decreasing and increasing tendencies of income inequality. It can be interpreted that when financial development reaches 1.13% of expansion, the income inequality tends to rise. This relationship is sensible when considered in the context of Thailand's economic progress over the study period. Thailand's economy has risen at an exponential rate since the 1980s, with the goal of becoming a Newly Industrialized Country (NIC). The financial system has evolved to become modernized with freedom and a business-friendly environment. Many leading economists agree that this period has witnessed an increase in the number of "middle class" people. They form a new generation of business owners, working in specific professions (doctors, professors, lawyers, etc.) and becoming corporate leaders. These social groups empowered a liberal economy and democratic political system (Pethprasert, 2005; Phongpaichit, 1993; Charoenlert, 1993). The emergence of a middle class has the potential to bridge the gap between the rich and the poor, contributing to some reduction of inequality.

However, at the beginning of the 21st century, the development of Thailand's financial system did not promote income equality. Apart from the expansion of the middle class, the development of the economy and financial system provided opportunities for big conglomerates to expand their investment into many diversified industries. Their investment expanded from only three main sectors (agribusiness, construction, and finance) in the 1980s to a wide range of businesses, such as energy, telecommunications, transportation, entertainment, etc. (Suehiro, 1996). Therefore, Thai conglomerates have been continuing to accumulate a great deal of wealth, widening the inequality gap between the rich and poor at an enormous scale (Hewison, 2021). It could be argued that the development of the financial system in Thailand has progressed towards what Harvey (2005) coined as a neoliberal agenda which tends to prioritize the wealth accumulation of financial and political elites at the expense of the greater good and benefit for the society. Hence, financial developments frequently benefit the rich more than the poor, regardless of whether they have access to capital, returns generation, and the gap in financial literacy between the rich and the poor (Wang et al., 2022).

Table 5 Short Run and Long Run Coefficients

Variables	Gini_N			Gini_M		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Panel A: Short run						
Δ Gini_N$_{t-1}$	0.3394**	0.3831**	-0.3163	-	-	-
Δ Gini_N$_{t-2}$	-	-	-0.7253***	-	-	-
Δ FDI$_t$	-0.1281**	-	-	-0.0398	-	-
Δ FDI$_{t-1}$	0.1830***	-	-	0.0057	-	-
Δ FDI$_{t-2}$	-0.0010	-	-	0.0017	-	-
Δ FDI$_{t-3}$	0.0095**	-	-	0.0074**	-	-
Δ FDI^2_t	0.0604**	-	-	0.0158	-	-
Δ FDI$^2_{t-1}$	-0.0848***	-	-	-	-	-
Δ DCP$_t$	-	-0.1678	-	-	-0.0018	-
Δ DCP^2_t	-	0.0763	-	-	-0.0040	-
Δ DCP$^2_{t-1}$	-	-0.0062**	-	-	-	-
Δ SMC$_t$	-	-	0.0030	-	-	-0.0022
Δ SMC$_{t-1}$	-	-	0.0051	-	-	-
Δ SMC$_{t-2}$	-	-	-0.0037***	-	-	-
Δ SMC$_{t-3}$	-	-	0.0032**	-	-	-
Δ SMC^2_t	-	-	-0.0017	-	-	0.0003
Δ SMC$^2_{t-1}$	-	-	-0.0022	-	-	-
Δ RGDP$_t$	-0.0229*	-0.0155	-0.0080	-0.0155	-0.0216***	-0.0053
Δ RGDP$_{t-1}$	-	-	0.0796***	-	-	-
Δ RGDP$_{t-2}$	-	-	0.0333	-	-	-
Δ RGDP$_{t-3}$	-	-	-0.0468**	-	-	-
Δ GOV$_t$	-0.0001	0.0025	0.0014	-0.0099	-0.0073	-0.0013
Δ GOV$_{t-1}$	-	-	0.0338**	-	-	-
Δ GOV$_{t-2}$	-	-	0.0455***	-	-	-
Δ GOV$_{t-3}$	-	-	-0.0365**	-	-	-
Δ INF$_t$	-0.0062	-0.0206	0.0062	-0.0391**	-0.0499***	-0.0271
Δ INF$_{t-1}$	0.0725**	0.0548**	0.0926***	0.0412**	0.0273*	0.0308**
Δ INF$_{t-2}$	-	0.0128	-0.0830**	-	0.0333**	-
ECT$_{t-1}$	-1.8083***	-2.0943***	-0.7393	-1.5234***	-1.4316***	-1.2431***
Panel B: Long run						
FDI	-0.1182***	-	-	-0.0385	-	-
FDI^2	0.0522***	-	-	0.0104	-	-
DCP	-	-0.0801	-	-	-0.0013	-
DCP^2	-	0.0411	-	-	0.0006	-
SMC	-	-	-0.0097	-	-	-0.0017
SMC^2	-	-	0.0049	-	-	0.0002
RGDP	-0.0126*	-0.0074	-0.1455	-0.0228*	-0.0151**	-0.0043
GOV	-0.0000	0.0012	-0.0771	-0.0065	-0.0051	-0.0010
INF	-0.0646***	-0.0535***	-0.0565	-0.0384***	-0.0426**	-0.0173
C	0.1430***	0.0979**	0.0258	0.1327***	0.1131***	0.0551

Note. *p<.10, **p<.05, ***p<.01

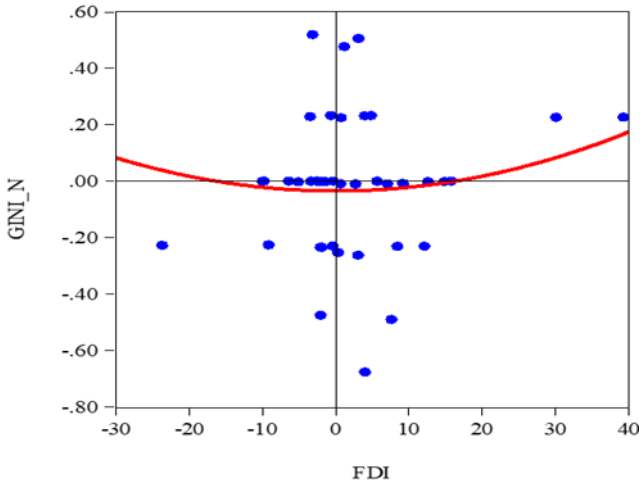

Figure 3 Financial Development and Income Inequality in Thailand

5. CONCLUSION AND SUGGESTIONS

Income inequality is a deep-rooted problem in Thailand, even though during past decades, the economy grows (in terms of number) satisfactorily. More than 50% of the country's income belongs to the rich. It is undeniable that financial development is an essential component of economic growth and has the potential to enhance or diminish income inequality. Therefore, to accomplish the United Nations Sustainable Development Goals (SDGs), policymakers in Thailand may want to strive to eliminate income inequality. We examine the relationship between Thailand's financial development and income inequality, including macroeconomic issues, using data from 1980 to 2020 with the ARDL approach. Thailand's financial development index indicates solid financial development. The results suggest that financial development and income inequality have a cointegration connection and speed adjustment. A non-linear relationship between financial development and income inequality supports the U-shape hypothesis while rejecting Greenwood and Jovanovic's (1990) inverted-U hypothesis. Furthermore, macroeconomic factors such as economic growth and increased inflation will significantly reduce income inequality.

The confirmation of the U-shape hypothesis in this study implies the inefficiency of financial development in Thailand which is in a favor of the rich in comparison to the poor. Policymakers should promote financial inclusion, particularly the issue of credit collateral, building a financial literacy for the poor, and creating financial market stability. The government should develop proactive macroeconomic policies that rely on taxation to keep inflation under control and relax credit regulations of financial institutions for creating more equal opportunities. This study provides insight regarding the general relationship between financial development and income inequality in Thailand. The direction of future research in the topic should pursue a more detailed analysis of sub-topics, including the accessibility and efficiency of financial development in both financial markets and institutions.

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