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Human Development, Institutional Quality, and Financial Development in Developing Economies: Empirical Insights from Vietnam

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Abstract

This study delves into the effect of human development and institutional quality on financial development in Vietnam from 1996 to 2022 by using ARDL techniques. Key findings of the study highlight that in the short run, both human development and institutional quality correlate positively with financial development. In the long run, the result emphasizes the importance of institutional quality on financial development. Furthermore, this research deeply analyzed the mutual effect of the six components of institutional quality and human development on financial development. The results exhibit that these interactions could magnify a stronger influence on financial development in the short run and long run in Vietnam. However, the finding does not support the impact of the interaction term between government effectiveness and human development in the long run, which should be intensively examined in further work. This research contributes empirical evidence to designing sufficient policies for Vietnam to enhance financial development.

Keywords: Human capital, Institutional quality, Financial development, Vietnam

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1. Introduction

Financial development is a core component of economic growth, as it has various impacts on several areas of economic development and the well-being of society (Magazzino & Santeramo, 2024; Sanso-Navarro & Vera-Cabello, 2016). Previous studies into financial development and its multifaceted role in economic development reveal that the gap between developing and developed countries can make significant contributions to the possibilities and capabilities of financial development. Specifically, considering human development as a result as well as a driver of economic growth at both micro and macro levels, this factor also plays a crucial role in financial development (Allub et al., 2024; Das & Chakraborty, 2024; Milutinović et al., 2024; Thomas & Spataro, 2018). Indeed, human development has considerable significance in financial development, by not only maximizing human capital but also increasing productivity and offering more accessible financial services through financial institutions. As an illustration, recent studies show that participants with a higher level of financial literacy and wealth engage in financial services more actively, promoting their participation in stock markets (Chen et al., 2023; Thomas & Spataro, 2018). Accordingly, Thomas and Spataro (2018) conclude that greater participation in financial markets, increasing demand for financial services, and improving financial literacy are the determinants of financial systems, which generate a sustainable financial environment. Additionally, a well-educated workforce is recognized as the human capital asset which improves and drive smoothly in both financial markets and institutions (Shahbaz et al., 2018; Zaidi et al., 2019)

Institutional quality is also a decisive factor in financial development. Empirical research finds that with an efficient legal system, strong performance of contracts, minimal corruption, and effective regulatory mechanisms, institutions significantly contribute to the sustainability of the financial environment (Feng & Yu, 2021; Kassie, 2021; Magwedere & Marozva, 2025). As a result, financial stability is improved when the rights of property owners are secured, and the costs of transactions are decreased. Additionally, high-quality institutions also protect investors and ensure that the capital is allocated properly by financial markets. In contrast, low-quality institutions lead to

deficiencies in allocating resources, accessing finance, and increasing financial risks. Early on, Acemoglu and Robinson (2005) argue that nations with inclusive institutions that enable greater access to financial services are more likely to develop more efficient financial systems and sustainable economic growth. Also, financial regulations that ensure transparency, mitigate risks, and restrict financial crises play an essential role in promoting the confidence of investors and the development of financial markets (Feng & Yu, 2021; Galvão & Loures, 2011).

In the context of Vietnam, the rapid growth of the financial sector necessitates an increase in human development, potentially fostering a more educated, skilled, and healthier workforce with growing demands for financial products. Therefore, there is a gap in the skills necessary for managing complex financial products, advanced risk management, and quality services, leading to inefficiencies and potential risks in the financial sector that require skilled professionals to fill this gap. Similarly, the inefficient development of specialized expertise within Vietnam's banking sector impedes the effective management of financial risks, thereby restricting the expansion of the financial market. Furthermore, the World Bank emphasizes the disparities among regions as individuals living in rural areas are less likely to receive financial education and infrastructure, which delays financial development. Accordingly, investigating these challenges is essential for fostering sustainable financial development through human development and institutional environment factors in Vietnam.

Given the significant impact of human development and the regulatory environment on the stability of the financial system, there has been a great deal of research on the nexus of human capital and institutional quality in financial development in developed economies. However, a limited number of studies have explored the role of both human development and financial development in developing economies. Hence, this research examines both key factors of human development and institutional quality in financial development in Vietnam, a developing economy. Furthermore, this study attempts to highlight the synergistic effects between institutional quality and human development by incorporating the interaction between each indicator of these two factors to explain financial development in Vietnam. This

is because human capital and institutional quality could collaborate synergistically and mutually strengthen each other to spur and facilitate financial development (Atsu & Adams, 2023; Bekana, 2019).

Accordingly, this research contributes empirical evidence of the role of human development and institutional quality in financial development by conducting data from a developing country. Moreover, in contrast to prior studies, financial development in this study is an index measured by synthesis and incorporates three indicators, including depth, access, and efficiency of financial institutions and financial markets developed by Svirydzenka (2016). In earlier studies, financial development was measured by a single indicator by proxy as domestic credit or credit to the private sector (Alawi et al., 2022; M. A. Khan et al., 2020). Lastly, this study emphasizes that the role of interaction of institutional quality and human development could enhance the impact on financial development in the short run and long run in Vietnam.

The rest of the paper is organized as follows: Section 1 provides a literature review. Section 2 presents the methodology which sets the data and at the same time outlines the empirical strategy. Section 3 reports and discusses our empirical results, while the last section concludes the study with key implications for policy.

2. Literature review

According to the World Bank, financial development refers to expanding the financial market, institutional access, stability, efficiency, and depth. It is a process in which financial institutions, markets, and intermediaries facilitate the flow of information, enforce transparent transactions, and minimize transaction costs. Its goal is to properly perform the functions of the financial sector in an economy.

Financial development is a multifaceted process in which human development and institutional quality have dramatic effects. Empirical research highlights the crucial role of human capital in financial development and how significantly the development of education, health, and income affects the growth of financial systems. As an outcome of human development, a qualified and efficient workforce accelerates the growth of financial products and services. Hatemi-J and Shamsuddin (2016) claim that a qualified

workforce requires a broader range of financial services to meet their growing demands. Moreover, according to Asongu and Odhiambo (2021), improvements in education and health enhance financial literacy and financial knowledge, making access to financial services more feasible. On a national scale, when a country has higher human development indices, its financial system has a higher level of accessibility because of the greater involvement of its qualified and healthy workforce in financial markets (Chen et al., 2023; Ofosu-Mensah Ababio et al., 2021). In addition, financial technology like fintech services and digital banking has the potential to advance in such countries (Çeştepe et al., 2024; Mastilo et al., 2025). The findings from these studies align with the Human Capital Theory (Becker, 1964) that highlighted the profound impact of human development, especially the development of education and training, on financial development. Similarly, a highly literate, skilled, and healthy workforce has an advantage of attracting both internal and external financial resources, allowing it to become a significant contributor in the global market (Yang et al., 2022).

In addition to human development, several reviewed studies show that governance significantly impacts financial sector dynamics and its long-term growth. Fry (1989) argues that the McKinnon–Shaw model that applies financial liberalization programs in many emerging countries emphasizes the significance of macroeconomic stability and bank regulations, considering institutional quality and stability as crucial components in financial development. Further, when exploring the determinants of financial growth within the political framework, Beck et al. (2001) identify legal theories proposing that the legal systems exert financial development through two channels, including the political channel and the legal adaptability channel. In research in the United States, Khan et al. (2019) analyzed the datasets for the study spanning from 1984 to 2016. The findings suggest that a positive correlation was obtained between institutional quality and financial development. Furthermore, Yousaf and Riaz (2024) reviewed the literature on the institutional quality and financial development nexus and showed that financial development is affected by institutional quality. Particularly, Aluko and Azeez (2019) discovered the rule of law correlates negatively with stock market development. Similarly, Nguyen et al. (2024) found that institutional quality tends to decrease in private investment. However, Khan et al. (2022), using the

panel data of developing and emerging countries, provided convincing evidence of a strong association between institutional quality and financial development. In research conducted in Africa using the Z-score to represent financial development to examine the relationship between natural resources, financial development, and institutional quality within the natural resource curse hypothesis, Dwumfour and Ntow-Gyamfi (2018) confirm that institutional quality can support reducing the negative effect of resource rents on financial growth.

Also having dramatic impacts on the sustainability of the financial environment, other institutions like an effective legal system, great contract performance, low-level corruption, and efficient regulations ensure property rights, low costs of transaction, and the stability of the financial system, which maintain efficient capital allocation and investor protection. As an illustration, countries with accessible financial institutions have a propensity to obtain resilient financial systems and long-term economic growth (Acemoglu & Robinson, 2005; De Vita et al., 2022; Prukumpai et al., 2022; Salifu et al., 2024). Also, institutional frameworks play a crucial role in enhancing well-regulated financial markets (Abaidoo & Agyapong, 2022). Regarding financial regulations, Galvão and Loures **(**2011) argue that this factor has a positive correlation with the returns, and a negative correlation with the volatility in the stock market. In addition, financial regulations could help develop financial markets when financial transparency, risks, and crises are controlled by these regulations.

However, recent research claims that there is a close collaboration and reinforcement between human capital and institutional quality that exerts a synergistic impact to foster financial growth, thereby generating a sustainable financial system (Atsu & Adams, 2023; Bekana, 2019). Similarly, Ferede (2022) states that human capital cannot work separately to accelerate economic development, but in collaboration with resilient institutions. Moreover, high-quality institutions can only achieve their fullest potential with the assistance of a well-educated and skilled workforce engaging greatly in the financial system. Previous studies on institutional quality and financial development reveal that by implementing macroeconomic and monetary policies, institutions have a profound influence on the growth of the financial

system (Fernández & Tamayo, 2017; Yousaf & Riaz, 2024). In addition, within essential variables, the GDP growth rate, inflation, financial openness, and trade openness also affect financial development (Bandura, 2022; Salifu et al., 2024).

In developing countries, the expansion of financial systems requires the combination of human development and institutional quality, as these economies encounter distinctive challenges of informality, financial exclusion, and distrust of financial institutions. Specifically, countries that have enhanced institutions and a more knowledgeable population are more likely to achieve financial growth at a faster pace because of greater capital inflows and expanded participation in official financial systems.

3. Research Methodology

3.1 Data

This study uses annual time-series data for Vietnam. The data spans from 1996 to 2022, and it was collected from the International Monetary Fund, United Nations Development Programme (UNDP), and World Bank databases. Financial development is a dependent variable measured by the financial development index. Human development and institutional quality factors are considered two main independent variables collected from the United Nations Development Programme and World Bank databases. In addition, the empirical research model also has control variables comprising GDP growth, inflation rate, trade openness, and financial openness. Table 1 delivers variables' description and table 2 shows descriptive statistics of the variables that were analyzed in this study.

Table 1: Variable Description

Variable	Symbol	Variable Definition	Unit of Measurement	Source
Financial development	FD	Development level of the financial system in terms of financial institution and financial markets in depth, access and efficiency level	Index ranged from 0 (lowest) to 1 (highest)	IMF
Human development	HDI	Development level of human in three aspects including life expectancy, education, and income		UNDP

Institutional Quality	IQ	The quality level of a country's institutions functions in guiding its economic, political, and social development with stability and integrity	Aggregate index	World Bank
Voice and Accountability	VA	Citizens' participation in selecting their government, as well as freedom of expression, freedom of association, and free media.	Index ranged from -2.5 (weak) to 2.5 (strong) – These indices are used to calculate the aggregate institutional quality index	
Political Stability and Absence of Violence	PS	Political instability and politically motivated violence, including terrorism.		
Government Effectiveness	GE	The quality of public and civil services, the quality of policy formulation and implementation, and the credibility of the government's commitment to policies		
Regulatory Quality	RQ	The ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.		
Rule of Law	RL	Confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts		
Control of Corruption	CC	Public power for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests		
GDP growth	GROWTH	The change in the value of total gross domestic product over a year	annual %	World Bank
Inflation	INF	The change in the price level of a basket of goods and services	annual %	
Trade openness	TO	A nation's engagement in international trade measured as the sum of exports and imports as a percentage of GDP	%GDP	
Financial openness	FO	The degree of a country's openness to cross-border financial transactions, including capital inflows and outflows	Index ranged from 0 (lowest) to 1 (highest)	Chinn & Ito (2008)

Source: Author's compilation

Table 2: Variables' descriptive statistics

Symbol	Obs	Mean	Std. Dev.	Min	Max
FD	27	0.361	0.041	0.296	0.458
HDI	27	0.660	0.050	0.560	0.726
IQ	27	-0.006	0.986	-1.440	1.640
VA	27	1.117	0.103	0.962	1.413
PS	27	2.716	0.173	2.383	3.026
GE	27	2.295	0.226	1.919	2.743

RQ	27	1.935	0.120	1.733	2.263
RL	27	2.122	0.211	1.821	2.565
CC	27	1.958	0.119	1.743	2.213
GROWTH	27	5.772	5.241	-1.710	23.115
INF	27	6.436	1.451	2.554	9.340
TO	27	134.815	25.895	92.706	186.676
FO	27	0.304	0.129	0.163	0.417

Source: Author's estimation

3.1 Empirical research model

In this research, we observe the impact of human development and institutional quality on financial development in Vietnam. The static equation in this research can be displayed as follows:

$$FD_t = \gamma_0 + \gamma_1 HDI_t + \gamma_2 IQ_t + \gamma_3 Growth_t + \gamma_4 INF_t + \gamma_5 TO_t + \gamma_6 FO_t + \varepsilon_t \quad (1)$$

In equation (1), FD_t measures the financial development index which is calculated by a multi-dimensional approach as the proxy variables in financial depth, access, and efficiency for financial institutions and financial markets (Cihak et al., 2012). HDI_t is gauged by the Human Development Index and calculated from three dimensions, including the life expectancy index, the education index, and the GNI index. IQ_t denotes the Institutional Quality Index which is an aggregate index calculated by using six governance indicators including Voice and Accountability (VA); Political Stability and Absence of Violence (PS); Government Effectiveness (GE); Regulatory Quality (RQ); Rule of Law (RL); Control of Corruption (CC). These indicators range from -2.5 to 2.5, reflecting weak to strong levels of institutional quality. Growth, INF_t, TO_t, and FO_t are GDP growth, inflation rate, trade openness, and financial openness, respectively, which are added as control variables in the model.

This study applied the Autoregressive Distributed Lag (ARDL) method proposed by Pesaran et al. (2001) for cointegration to estimate the short-run and long-run effects of human development and institutional quality on financial development in Vietnam. The general form of the ARDL model is presented as follows:

$$\Delta y_t = \alpha_0 + \delta_1 y_{t-1} + \delta_2 x_{t-1} + \delta_3 z_{t-1} + \sum_{i=1}^{n} \beta_{1i} \Delta y_{t-i} + \sum_{j=0}^{m} \beta_{2j} \Delta x_{t-j} + \sum_{k=0}^{p} \beta_{3k} \Delta z_{t-k} + \varepsilon_t \quad (2)$$

where y is the dependent variable (financial development - FD), x represents the main explanatory variables (human development – HDI; and Institutional quality – IQ), and z denotes control variables (Growth, inflation rate - INF, trade openness -TO, and financial openness - FO); δ_1, δ_2, and δ_3 are estimated coefficients in the long run, while β_1, β_2, and β_3 denotes coefficients in the short run; n, m, p represent the optimal lag lengths for y, x, and z, respectively; Δ denotes the difference level of variables in the model, and ε_t is the error term. Based on this general form in equation (2), the ARDL model for examining the effect of human development and institutional quality on financial development can be displayed:

$$\Delta FD_t = \alpha_0 + \delta_1 FD_{t-1} + \delta_2 HDI_{t-1} + \delta_3 IQ_{t-1} + \delta_4 Growth_{t-1} + \delta_5 INF_{t-1} + \delta_6 TO_{t-1} + \delta_7 FO_{t-1} + \sum_{i=1}^{n} \beta_{1i} \Delta FD_{t-i} + \sum_{j=0}^{m1} \beta_{2j} \Delta HDI_{t-j} + \sum_{k=0}^{p1} \beta_{3j} \Delta IQ_{t-j} + \sum_{k=0}^{p2} \beta_{4k} \Delta Growth_{t-k} + \sum_{k=0}^{p2} \beta_{5k} \Delta INF_{t-k} + \sum_{k=0}^{p3} \beta_{6k} \Delta TO_{t-k} + \sum_{k=0}^{p4} \beta_{7k} \Delta FO_{t-k} + \varepsilon_t \quad (3)$$

The abbreviation of variables in equation (3) is described in equation (1).

In order to further examine the interaction effect of each specific aspect of human development and institutional quality on financial development in Vietnam, we extend the baseline model in equation (1) by adding the interaction term IQ*HDI, presented as a static equation as follows:

$$FD_t = \gamma_0 + \gamma_1 HDI_t + \gamma_2 IQ_t + \gamma_3 IQ*HDI_t + \gamma_4 Growth_t + \gamma_5 INF_t + \gamma_6 TO_t + \gamma_7 FO_t + \varepsilon_t \quad (4)$$

Where the interaction term IQ*HDI includes six indicators of Voice and Accountability (VA*HDI); Political Stability and Absence of Violence (PS*HDI); Government Effectiveness (GE*HDI); Regulatory Quality (RQ*HDI); Rule of Law (RL*HDI); and Control of Corruption (CC*HDI). These indicators are estimated separately in ARDL regressions in both the short-run and long-run.

The ARDL analysis in this study is conducted through a systematic procedure. First, unit root tests are employed to examine the stationarity properties of the time-series data, determining whether the data series is stationary at I(0) or I(1) to ensure that the model is not subject to spurious regression due to non-stationary data. Subsequently, the optimal lag length for each variable is determined by using optimal lag length

criteria. The Bounds testing approach to cointegration is then applied to ascertain the existence of long-run equilibrium relationships among the variables. After that, the empirical results through the ARDL regression in the short run and long run are estimated. To ensure the robustness and reliability of the model, diagnostic tests are performed, including tests for autocorrelation, heteroskedasticity, and the normality of residuals. The stability of the estimated model is assessed by using the graph of cumulative sum (CUSUM) and cumulative sum square (CUSUMSQ).

4. Research Results and Discussion

4.1 Unit root test

We use the ADF test of Dickey and Fuller (1979) and the Phillips-Perron test to test the existence of unit roots in the variables. The results of the unit roots are presented in Table 3 and indicate that all variables are stationary at either I(0) or I(1) and statistically significant. While Growth and INF are stationary at level I(0). Other variables, including FD, HDI, IQ, FO, and TO, become stationary at the first difference level I(1). Though these variables are integrated at different levels, no variables are stationary at I(2), and that satisfies the necessary condition for applying the ARDL model.

Table 3: Unit root test

Variables	Augmented Dickey-Fuller test statistic		Phillips-Perron test statistic		Integration I()
	At level	1st diff	At level	1st diff	
FD	-2.485	-6.206***	-2.440	-6.573***	I(1)
HDI	-1.694	-7.054***	-9.393***		I(1)
IQ	-0.875	-5.836***	-0.768	-5.804***	I(1)
GROWTH	-6.157***		-3.628**		I(0)
INF	-3.085**		-13.376***		I(0)
FO	-1.855	-5.000***	-1.084	-5.000***	I(1)
TO	-1.957	-4.422***	-1.103	-4.405***	I(1)

Note: The abbreviations in Table 3 are explained as follows: FD denotes financial development; HDI is human development; IQ is institutional quality; GROWTH is GDP growth; INF is inflation; FO is financial openness; TO is trade openness. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. *Source: Author's estimation*.

In order to determine the optimal lag length for time series in the ARDL model, the study is based on the results of FPE, AIC, SC, and HQ criteria in table 4. These criteria indicate that the optimal lag length for the model is 2 and the AIC gives

the most accurate results. The limitation of lag-length selection of the relatively small sample size is excessive lags could substantially reduce degrees of freedom that might affect the precision of estimates. To confirm this result, the study checks the optimal lag of each variable and the extra lags also be reported in the second section of table 4. This robustness checks with alternative lag lengths presents the lag of variables in the model up to 2, producing qualitatively similar results. Also, when variables are estimated by the ARDL, the model performs most effectively when the lag lengths of the variables FD, HDI, IQ, GROWTH, INF, FO, and TO are 2, 2, 2, 2, 2, 0, and 1, respectively. Accordingly, these lag lengths are appropriate and satisfy the optimal lag length assumptions of the ARDL (2,2,2,2,2,0,1) model.

Table 4: The optimal lag length criteria

	The optimal lag length criteria of variables in the model						
Lag	LogL	LR	FPE	AIC	SC	HQ	
0	61.11040	NA	2.02e-11	-4.7592	-4.4156*	-4.6680	
1	105.8596	55.6656	4.45e-11	-4.1550	-1.4061	-3.4257	
2	205.2748	74.5614*	2.52e-12*	-8.3562*	-3.2022	-6.9888*	
	The AIC result of each variable's lag length						
Lag	FD	HDI	IQ	GROWTH	INF	FO	TO
0	-3.52474	-3.66647	1.63107	3.47653	6.34375	-1.29722	9.05396
1	-3.8261*	-8.69137	0.4075*	3.51745	6.21626*	-2.9801*	7.54442*
2	-3.73915	-8.9192*	0.47205	3.1749*	6.28853	-2.89309	7.61689
3	-3.65219	-8.83534	0.54376	3.21786	6.24632	-2.8061	7.68539
4	-3.56533	-8.75108	0.57191	3.23837	6.26312	-2.71918	7.76153

Note: Given the relatively small sample size, including excessive lags would reduce the degrees of freedom and potentially compromise the precision of the estimates. In the second section of this table, only the AIC results are reported; however, other selection criteria yield a consistent optimal lag length. *Source: Author's estimation*

The long-term relationship between the variables is confirmed by the bounds test (cointegration test). The results in Table 5 reveal that the evaluated F-statistic of 5.174 is higher than the critical value of a 1% significance level of 4.43. Hence there could be a long-run association between financial development, human development, institutional quality, and control variables.

Table 5: Bound testing results

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.174	10%	2.12	3.23
		5%	2.45	3.61
		1%	3.15	4.43

Source: Author's estimation

Table 6 presents a summary of the results of the short-run and long-run and the relationship between financial development, human development, institutional quality, and explanatory variables. The left-hand side of Table 6 shows the findings of the short-run relationship between financial development with human development, institutional quality, and other explanatory variables. The short-run findings suggest that both human development and institutional quality positively and significantly influence financial development. That means a higher level of human development and better institutional quality could increase the level of financial development in Vietnam. Human development is presented by education level, income, and life expectancy. Therefore, more developed human resources provide a broader spectrum of customers who use financial products and services, creating more capital in the economy and stimulating the development process of the financial system in Vietnam (Ibrahim & Sare, 2018; Zaidi et al., 2019). Also, the positive effect of institutional quality recognizes the important role of institutions' environment in the financial sector. As a transition country with an underdeveloped background in the legal system, Vietnam's economy is affected by the change in governance capacity (Tran et al., 2023). The improvement of institutional quality in terms of more political stability, legal and regulatory systems, and better control of corruption facilitates activities in the financial system more efficiently and transparently, boosting financial development (Feng & Yu, 2021; Kassie, 2021).

In the short run, we documented the stronger effect of human development compared to institutional quality on financial development. The possible reason why, in the short term, human development has a strong positive impact on financial development is that in the first stage of development economics in general, and particularly for the development of the financial system (Chen et al., 2023; Z. Khan et al., 2020). It is necessary to have a labor supply and labor skills so human development is considered an important factor in promoting financial development (Ibrahim & Sare, 2018). Meanwhile, the change of institutional quality requires a longer time to channel the activities of the financial system because it might not directly impact capital resources compared to the income level of human development. Therefore, human development shows higher effects in the short run, while human development in the

long run does not have a significant effect, and institutional quality exerts a positive effect on financial development in the long run.

Table 6 also indicates that other factors, comprising inflation rate, financial openness, and trade openness, have a significant negative effect on financial development. The inflation rate has a negative effect on financial development because a higher inflation rate leads to a higher interest rate in the banking system, which makes loans costly and reduces capital circulation, lowering financial development. In terms of the negative effect of financial openness and trade openness on financial development. This is because the size of the financial system in Vietnam is relatively small and underdeveloped compared to the scale of the economy and its integration into the world. Therefore, more expansion in financial openness and trade openness might lead to complexity in the financial system, reducing financial development. These findings are supported by previous studies (Bandura, 2022; Salifu et al., 2024). The ECM(-1) presents how quickly adjustment towards the long-run equilibrium is achieved when short-run shocks occur. A negative ECM(-1) once again reveals the system's stability and quickly responds to shocks, particularly correcting around 100% of the short-run shocks in the following year.

Table 6: Short-run and long-run dynamics estimation

Dependent Variable: Financial development (FD)			
Short run		**Long run**	
Variable	Coefficient	Variable	Coefficient
$\Delta\mathbf{FD}(-\mathbf{1})$	0.531***(3.773)	HDI	13.889 (1.824)
ΔHDI	36.143***(6.384)	IQ	0.253*(1.999)
ΔIQ	0.056** (2.728)	Growth	-0.470 (-1.342)
ΔGrowth	-0.020 (-0.351)	INF	0.019 (1.294)
ΔINF	-0.040***(7.687)	FO	-0.559 (-1413)
ΔFO	-0.575**(-2.039)	TO	0.692 (0.882)
ΔTO	-1.356***(-7.942)		
CointEq(-1)	-1.029***(-8.511)		

Note: The abbreviations in Table 6 are explained as follows: FD denotes financial development; HDI is human development; IQ is institutional quality; GROWTH is GDP growth; INF is inflation; FO is financial openness; TO is trade openness. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors reported in parentheses. *Source: Author's estimation*.

In the long run, the results suggest that there exists a significant positive association between institutional quality and financial development. The findings of this study are consistent with previous studies by Hussain et al. (2020). They conducted

research in BRIC countries and found that better institutional quality is supportive of enhancing financial development. Similarly, the results from Erum and Hussain (2019) also documented the role of institutional quality in financial development. It could be revealed that institutional quality is so important to boost financial system development and keep the financial markets developing stability. Particularly, Vietnam belongs to a group of developing countries with low-middle income and the government is step by step promoting the securities market from the frontier stock market to emerging markets to extract financial sources from foreign investors. Hence, the essential role of institutional quality plays an important role in the growth of finance in Vietnam. However, human development and other control variables in the model are not significant determinants of financial development in the long run in Vietnam.

Furthermore, Atsu and Adams (2023) and Bekana (2019) augmented human capital, and institutional quality could cooperate synergistically and mutually strengthen each other to spur the finance-innovation nexus and facilitating financial development. Therefore, we extend to examine the mutual effect of specific aspects of institutional quality and human development on financial development in Vietnam, including the six interaction terms VA*HDI, PS*HDI, GE*HDI, RQ*HDI, RL*HDI, and CC*HDI in both the short run and long run, presenting the results in Table 6. In the short run, we pointed out the significantly positive effects of all six interaction terms on financial development. That means a better quality of the institutional system in all aspects in the context of a higher development level of human resources could result in higher financial development in Vietnam in the short run. The Bound tests confirm that there exists a long-run relationship between these interaction terms and financial development.

For the long run, regressions documented positive and significant effects of five interaction terms, including VA*HDI, PS*HDI, RQ*HDI, RL*HDI, and CC*HDI, on financial development while GE*HDI showed a non-significant impact. The non-significant effect might be explained by the situation of Vietnam, a transition country that changed the government regime. Hence government structure exerts an ambiguous influence on the economic activities and financial system as well. This result elicits

further analysis in future research focusing on the role of government effectiveness in the development of the financial system for a case study of transition countries.

Table 7: Analyzing the impact of the interaction between human development and each indicator of institutional quality on financial development

Interaction variables between institutional quality and human development	F-Bounds Test	Short-run effect on financial development	Long-run effect on financial development
VA*HDI	11.238***	1.426***	1.040**
		(0.423)	(0.369)
PS*HDI	6.763***	0.610***	0.595***
		(0.183)	(0.186)
GE*HDI	5.735***	0.339**	0.448
		(0.142)	(0.288)
RQ*HDI	4.244**	0.832***	0.804**
		(0.137)	(0.096)
RL*HDI	7.366***	0.761**	0.669**
		(0.277)	(0.289)
CC*HDI	8.428***	0.801**	0.728*
		(0.292)	(0.325)

Note: The abbreviations in Table 7 are explained as follows: HDI is human development; VA is Voice and Accountability; PS is Political Stability and Absence of Violence; RQ is Regulatory Quality; RL is Rule of Law; GE is Government Effectiveness; and CC is Control of Corruption. All interaction series are tested for unit root and the results confirm the stationarity property. Each regression already has included control variables consisting of GDP growth, inflation rate, trade openness, and financial openness. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Standard errors in parentheses. *Source: Author's estimation.*

Additionally, Table 7 shows higher coefficients of six interaction terms compared to non-interaction indicators of institutional quality and human development in the baseline analysis of Table 6 in both the short run and long run. This result demonstrated that when we combine better institutional quality and higher human development, a mutual influence that can amplify its effect on financial development is generated. This is due to better institutional quality in terms of government, law, and regulatory systems that can create a strong background to facilitate a good environment while higher level human development results in better particular subjects, including human and capital resources which directly operate activities in the financial system (Ofori et al., 2024; Stryzhak et al., 2022). Consequently, the mutual combination of these two factors produces an impulse to induce financial development at a higher level.

In order to confirm the stability and reliability of regression results, this study conducts the Autocorrelation test, heteroskedasticity test, and normal distribution test of residuals, as presented in Table 8. The results in Table 8 indicate that all tests have Prob > 0.05, so the model is correctly specified and does not suffer from any correlation

in the error term or heteroskedasticity problem, or specification errors. Accordingly, it could be concluded that the regression results obtained are stable.

Table 8: Diagnosis tests

Test	Probability
Breusch-Godfrey Serial Correlation LM Test	0.332
Heteroskedasticity Test: White	0.940
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.747

Source: Author's estimation

Also, the stability of the model is examined by using the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ). Figure 1 presents the results of these tests for the baseline model. The plots indicate that the recursive residual remains within the 5% significance level of the critical boundary, suggesting that the estimated parameters are stable over the sample period and that no structural instabilities are identified.

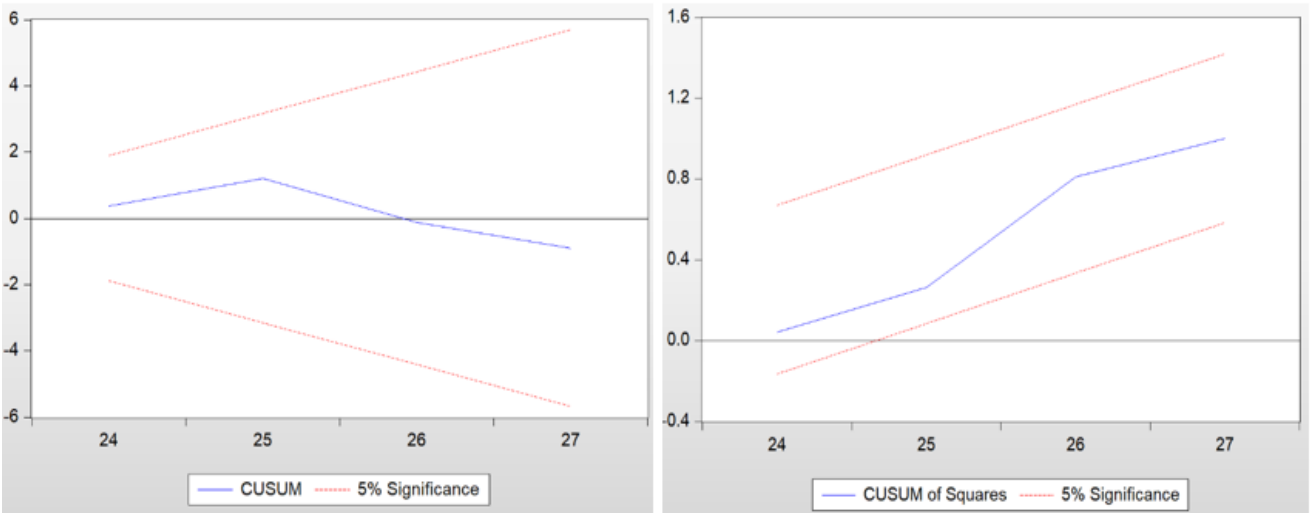


Figure 1: CUSUM and CUSUMSQ tests. *Source: Author's estimation*

5. Conclusion

Financial development has been an important policy in developing countries, including Vietnam, after the renovation campaign in 1986. In this study, we assess the impact of human development and institutional quality on financial development in Vietnam over the period 1996-2022. To achieve this objective, we construct the time-series data for the aggregate national level and employ ARDL regression to estimate the empirical model. In addition, this research applies various regressions to observe this linkage in the short run and long run and conducts further analyses of the interaction effect of specific aspects of institutional quality and human development on financial development.

The ARDL results in the short run pointed out the positive effect of both human development and institutional quality on financial development and the stronger effect of human development compared to institutional quality is documented. In the long run, institutional quality exhibits significant importance in increasing the development level of the financial system. Furthermore, when examining the mutual effect of the six components of institutional quality and human development, the findings support that interaction terms could amplify the higher influence on financial development. Better institutional quality in terms of voice and accountability, political stability, rule of law, regulatory quality, and control of corruption in the context of higher development of human resources could enhance financial development in both the short run and long run. We also highlight the significantly positive influence of government effectiveness in the short run, while there is no association in the long run that requires intensive investigation.

From the findings of this study, we propose policy makers encourage financial development through enhancing the contribution of human development and institutional quality. The positive effect of human development on financial development in the short run elicits policies aimed at increasing human development in terms of income and education level. It could be because income and knowledge exert a direct impact on capital resources and the quality of financial services and financial products. Thus, considering factors that improve human development would be done to

increase financial development. In the long run, we recommend leveraging institutional quality to facilitate activities in the financial system. As mentioned earlier, a developing country like Vietnam has faced challenges in stabilizing the governance environment systematically. Therefore, tailoring policies to improve institutional quality should be conducted in each aspect of the political, law, and regulation system, as well as voice and accountability, and control of corruption. Besides, our results also raise ambiguous issues of the effect of government effectiveness that should be analyzed in further studies.

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