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Institutional Quality, Financial Stability, and FDI Dynamics in Asia

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Abstract

This study aims to analyze how institutional quality and financial stability influence foreign direct investment (FDI) in Asian countries, examining differences across country income groups. This study utilizes data from 39 Asian countries spanning the years 2013 to 2021. The analytical tool used is the Generalized Method of Moments (GMM), consisting of first-difference GMM and system GMM. Furthermore, this study uses principal component analysis (PCA) to calculate composite variables related to the institutional quality index. The results show that institutional quality and financial stability have a positive overall impact on FDI in Asian countries. However, the impact varies depending on the country's level of income. Institutional quality has a more significant impact in high-income countries, while in lower-middle-income countries, economic growth is the primary determinant of FDI. These findings emphasize the importance of improving governance and financial stability in attracting foreign investment. Governments, particularly in lower-middle-income countries, need to strengthen law enforcement, reduce corruption, maintain political stability, and create regulations that support an investment climate to make it more attractive to foreign investors.

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INTRODUCTION

The evolution of economic thought, from Adam Smith's classical theory emphasizing specialization and division of labor to neoclassical and capital fundamentalist views, places investment as a crucial driver of economic growth. In developing countries, limited capital and low domestic savings have historically restricted investment, prompting governments to seek financing from abroad, particularly in the form of Foreign Direct Investment (FDI) (Todaro, 2000). FDI is essential not only for supplementing domestic funds but also for enabling access to advanced technology, managerial expertise, and international markets. Early research in the 1950s and 1960s suggested that FDI could harm underdeveloped economies (Kok & Acikgoz Ersoy, 2009). Recent perspec-tives grounded in endogenous growth theory provide a different interpretation. This theory emphasizes the significance of policy, institu-tional quality, and both domestic and foreign investment in achieving sustainable growth (Prastity, 2016). FDI supports economic trans-formation by transferring assets, managerial capabilities, and technological knowledge, while generating employment and reducing poverty (Ali et al., 2023).

Asia has emerged as a pivotal region in global FDI development due to its rapid economic expansion. As of 2023, Asia accounted for approximately half of global FDI inflows, reaching USD 662 billion (UNCTAD, 2023). However, these inflows remain concentrated in a few economies—China, Singapore, Hong Kong, India, and the United Arab Emirates—which together attract nearly 80% of total FDI. Despite temporary declines caused by global uncertainty, greenfield investments, particularly in manufacturing hubs such as Vietnam, Thai-land, and Indonesia, continue to increase. This dynamic pattern underscores the significance of both macroeconomic fundamentals and institutional factors in influencing FDI distribution across the region.

Asia's economic diversity—spanning differences in market size, governance, infrastructure, and regulatory systems—necessitates a nuanced approach to understanding FDI determinants. Empirical evidence suggests that countries with stronger institutional quality—characterised by stable governance, regulatory efficiency, and low corruption—tend to attract higher FDI inflows (Khan et al., 2024; Musili, 2023). In contrast, political instability and weak legal frameworks are likely to discourage foreign investors (Petrović-Ranđelović, Jovanović, and Radukić, 2022).

Financial stability also plays a critical role in attracting foreign investment. Studies across various regions have confirmed that well-functioning financial systems encourage FDI inflows, while crises, inflation, or currency volatility undermine investor confidence (Kellard et al., 2022; Shen, Zhao, and Mo, 2024). For example, in Pakistan and China, good financial conditions have had a significant positive im-pact on FDI, whereas macroeconomic uncer-tainty has reduced investment levels (Lutfi et al., 2022; Saleh, 2023).

Inflation is a highly influential factor; persistent inflation often deters FDI, as evidenced in Nigeria, the SAARC region, and various other developing economies (Al Faruq & Yuliana, 2023; Alam, Nur Alam, and Hoque, 2020). Similarly, exchange rates, interest rates, and trade openness are among the key macroeconomic variables influencing foreign investors' decisions. Although Gross Domestic Product (GDP) growth generally shows a positive relationship with FDI, conflicting evidence remains. For instance, Naibaho, Tewu, and Tambunan (2022) found a negative relationship between GDP and FDI in Indonesia, suggesting that the impact may vary depending on the domestic economic structure and policy environment.

Technological development further enhances a country's ability to attract FDI, especially in industries driven by digital innovation. The rapid growth of mobile phones and broadband penetration across Asia has fostered investment opportunities, particularly in telecommunications and digital services. Nations such as China, India, and Vietnam have become

major FDI destinations due to their large consumer markets, cost-competitive labour, and improved digital infrastructure (Ali et al., 2023; Nguyen, 2022). The proliferation of mobile phone users illustrates how technology functions not only as a magnet for FDI but also as a catalyst for broader economic development.

Given Asia's strategic position in the global economy, understanding the various factors influencing FDI is crucial for effective policymaking. In addition to domestic factors, regional dynamics such as economic integration, cross-border infrastructure connectivity, and uniform regulations significantly influence investment patterns. Therefore, studies are needed that consider the relationship between macroeconomic indicators and institutional quality, while also incorporating variables such as technological readiness, financial system resilience, and governance effectiveness. Such an integrated approach would provide policymakers with valuable insights for designing strategies that encourage sustainable and inclusive investment.

Despite extensive research, key gaps persist in understanding the relationship between FDI and economic growth in Asia. Most studies focus on single countries, overlooking regional diversity and the joint role of macroeconomic, institutional, and technological factors. The combined effects of governance quality, digital infrastructure, and uncertainty on FDI also remain underexplored. A more comparative and integrative approach is therefore needed to capture Asia's economic heterogeneity. This study addresses existing research gaps by examining the determinants of FDI inflows in Asia through an integrated framework combining macroeconomic indicators (GDP growth and inflation), institutional quality (governance, regulation, and political stability), and technological pro-gress (digital infrastructure and mobile connec-tivity).

The study's novelty lies in its compara-tive and interactive approach, capturing how governance, financial stability, and technology jointly influence investment flows. This integrated analysis provides new empirical insights and practical implications for policymakers seeking to enhance Asia's investment competitiveness and economic resilience. This study addresses these omissions by employing a multi-country comparative approach and developing an integrated analytical framework incorporating macroeconomic indicators, institutional quality, and technological progress.

RESEARCH METHODS

This study uses aggregate panel data from 39 Asian countries for the period 2013–2021. All variables are obtained from World Bank databases, primarily from the World Development Indicators (WDI), the World Governance Indicators (WGI), and the Global Financial Development Database (GFDD). The list of variables, operational definitions, and measurement indicators is summarized in Table 1 below.

Political stability (PS), voice and accountability (VA), government effectiveness (GE), regulatory quality (RQ), control of corruption (CC), and rule of law (RW) are some of the aspects of governance that are included in institutional quality. When taken as a whole, these dimensions characterize the general setting in which economic activity occurs, reflecting the level of political stability, transparency, regulatory effectiveness, and legal dependability—elements that are crucial in influencing investor confidence and drawing in foreign direct investment.

To comprehensively measure institutional quality, this study employed the Principal Component Analysis (PCA) technique. PCA is a multivariate statistical method used to reduce the dimensionality of a dataset by transforming interrelated variables into several unrelated components (Bartholomew, Knott, and Moustaki, 2011; Asongu & Nnanna, 2019).

Prior to extraction, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used to assess data suitability, with a threshold value of greater than 0.5. The PCA was performed using seven governance-related indicators: Political Stability, Rule of Law, Control of Corruption, Voice and Accountability, Regulatory Quality,

Government Effectiveness, and Institutions of Commercial Banks.

A principal component is retained if its eigenvalue exceeds 1.0 or if the cumulative explained variance surpasses 60% (Banda & Kumarasamy, 2020; Malik *et al.*, 2022). The resulting composite institutional quality (IQ) index is calculated using the weighted linear combination of each governance indicator, as represented in Equation (1):

$$IQ_{it} = w_1 PS_{it} + w_2 RW_{it} + w_3 CC_{it} + w_4 VA_{it} + w_5 RQ_{it} + w_6 GE_{it} + w_7 IC_{it} \quad \text{..... (1)}$$

where $w_i$denotes the PCA-derived component weights for each institutional dimension.

Table 1. Research Variables

Variable	Definition	Measurement Indicators	Source
Foreign Direct Investment (FDI)	Net investment inflows from foreign investors holding ≥10% of shares in domestic companies, including equity, reinvestment of profits, and intra-company loans	USD (US dollar)	World Bank-World Government Indicators (WGI)
Mobile Phone	Number of active mobile cellular subscriptions providing access to the public telephone network using cellular technology; indicates the level of ICT accessibility and connectivity.	Percentage (%) per 100 inhabitants	World Bank – World Development Indicators (WDI)
Institutional Quality (IQ)	Perceptions of the quality of public services, bureaucratic capacity, quality of policy formulation and implementation, and the credibility of government commitments	Index (-2,5-2,5)	World Bank-World Government Indicators (WGI)
Rule of Law (RL)	Confidence in legal institutions, contract enforcement, and protection of property rights.	Index (-2,5-2,5)	World Bank- World Government Indicators (WGI)
Control of Corruption (CC)	The extent to which public power is used for private gain and the effectiveness of anti-corruption measures	Index (-2,5-2,5)	World Bank- World Government Indicators (WGI)
Voice and Accountability (VA)	Degree of citizen participation, freedom of expression, and media freedom.	Index (-2,5-2,5)	World Bank- World Government Indicators (WGI)
Regulatory Quality (RQ)	Ability of the government to formulate and implement pro-private-sector regulations	Index (-2,5-2,5)	World Government Indicators (WGI)
Political Stability (PS)	Likelihood of political instability and politically motivated violence or terrorism.	Index (-2,5-2,5)	World Bank- World Government Indicators (WGI)
Institution of Commercial Banks (IC)	Refers to the structure and institutional strength of licensed commercial banks providing deposit, credit, and payment services; it reflects financial development and institutional quality of the banking sector.	Percentage (%)	World Bank- World Development Indicators (WDI)
Financial Stability	The resilience and soundness of the financial system in performing its intermediation functions without systemic crisis. Financial stability is measured using the z-score indicator. Financial stability with the Z-score indicator using secondary data obtained from the World Bank	Index	World Bank – Global Financial Development Database (GFDD)
Inflation (CPI)	Annual rate of change in the Consumer Price Index (CPI), representing the percentage increase in the general price level of goods and services consumed by households	Annual percentage (%)	World Bank- World Development Indicators (WDI)

Variable	Definition	Measurement Indicators	Source
Gross Domestic Product (GDP)	The total monetary value of all final goods and services produced within a country in a given year represents the overall economic activity and performance.	USD (US dollar)	World Bank- World Development Indicators (WDI)

This study applies an extended version of the Solow Growth Model to examine the determinants of foreign direct investment (FDI). The original Solow model (Solow, 1957) emphasizes capital accumulation, labor, and technological progress as key drivers of economic growth. This framework was later expanded to include human capital and knowledge (Romer, 1990) and subsequently institutional quality, which shapes investment incentives, productivity, and capital allocation (Knowles & Owen, 1995) The extended Solow framework is well suited to FDI analysis because foreign investment represents not only an inflow of physical capital but also a channel for technology transfer, managerial skills, and productivity spillovers. The extent to which these benefits materialize depends on institutional quality, which reduces uncertainty, protects property rights, and strengthens investor confidence. Additionally, macroeconomic stability, financial system resilience, and technological readiness all influence the productivity of capital and the attractiveness of host economies. Together, these factors provide a coherent framework for analyzing the macroeconomic, institutional, financial, and technological determinants of FDI. Empirically, the study employs the Generalized Method of Moments (GMM) estimator to address the dynamic and endogenous nature of FDI inflows. FDI tends to be persistent over time, making the inclusion of a lagged dependent variable necessary but potentially biased under conventional estimation methods. Moreover, institutional quality, economic growth, and financial stability may be jointly determined with FDI, creating endogeneity concerns. The system GMM estimator addresses these issues by using internal instruments derived from lagged variables, thereby controlling for reverse causality, simultaneity, and unobserved country-specific effects. This approach is particularly suitable for panel data with a large cross-sectional dimension and a relatively short time span, as in the case of 39 Asian countries observed from 2013 to 2021. Overall, combining the extended Solow model with the GMM estimator ensures a theoretically grounded and empirically robust analysis of FDI inflows in Asia. Dynamic panel data models are necessary given the larger number of cross-sectional units and the shorter time dimension. This study used data from 39 countries spanning an 8-year time series from 2013 to 2021. The use of dynamic panels is also supported because, when evaluating traditional estimators such as combined OLS (fixed effects and random effects), increasing the cross-section does not eliminate the problem of correlation and can lead to upwardly biased estimates.

Additionally, due to the correlation among predictor variables, the random effects do not align (Farzana et al., 2024). In addition, Levine & Renelt (2016) criticize cross-sectional regression methods because they are susceptible to the independent variables included. In other words, the estimated parameters change significantly when one or more variables are included or excluded from the model.

The dynamic nature of FDI inflows and potential endogeneity issues are addressed using the Generalized Method of Moments (GMM) estimator, which is appropriate for panel data with lagged dependent variables.

The general empirical specification is expressed as:

$$FDI_{i,t} = \alpha_0 + \alpha_1 FDI_{i,t-1} + \alpha_2 IQ_{i,t} + \alpha_3 FS_{i,t} + \alpha_4 MP_{i,t} + \alpha_5 GDP_{i,t} + \alpha_6 INF_{i,t} + \varepsilon_{i,t} \quad (2)$$

where FDI_{it} represents net inflow of foreign direct investment, IQ_{it} denotes the composite institutional quality index, FS_{it} is the financial stability indicator, MP_{it} refers to the mobile phone penetration rate, GDP_{it} stands for gross

domestic product, INF_{it} is the inflation rate, and ε_{it} is the error term.

In this study, financial stability is measured using the Bank Z-score obtained directly from the World Bank's Global Financial Development Database (GFDD). The Z-score is a widely used indicator of banking system stability that captures the distance from insolvency by combining information on bank profitability, leverage, and return volatility. Importantly, the Z-score used in this study is secondary data and is not calculated by the authors. The Bank Z-score is defined as:

$$Z = \frac{ROA + \left(\frac{Equity}{Assets}\right)}{\sigma(ROA)}$$

where *ROA* represents return on assets, *(Equity / Assets)* measures bank capitalization, and *σ(ROA)* denotes the standard deviation of ROA. A higher Z-score indicates a lower probability of insolvency and, therefore, a more stable banking system.

The GFDD provides a country-level aggregated Z-score that reflects the overall soundness and resilience of the banking sector. This indicator has been widely used in empirical studies examining financial stability, investment flows, and economic performance, particularly in cross-country and panel-data settings. By relying on standardized World Bank data, this study ensures cross-country comparability and avoids potential measurement bias associated with constructing Z-scores independently.

Accordingly, throughout this study, the terms "financial stability" and "Bank Z-score" are used interchangeably, referring to the same indicator sourced from the GFDD. Higher values of the Z-score indicate greater financial stability, while lower values suggest increased banking sector vulnerability.

RESULTS AND DISCUSSION

Table 2 presents the results of the KMO and Bartlett's tests used to assess the suitability of the data for Principal Component Analysis (PCA). The KMO value of 0.848 indicates that the correlations among variables are adequate, making the dataset appropriate for PCA. The Bartlett's Test of Sphericity is also significant, with a chi-square value of 2980.073 and a p-value of 0.000, suggesting that the variables are interrelated and suitable for factor analysis.

Table 2. KMO and Bartlett's Test of Sphericity Quality

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.848
Bartlett test of sphericity	
Chi-square	2980.073
df	21
p-value	0.000

Source: Data Processed, 2025

Meanwhile, Table 3 shows the PCA results for the *institutional quality* variable. The first component (Comp1) has an eigenvalue of 4.817 and explains 68.82% of the total variance, which is well above the threshold of 1.0. This indicates that a single principal component is sufficient to represent the overall dimension of institutional quality. Therefore, all governance indicators can be combined into a single composite index that effectively captures the multidimensional nature of *institutional quality* across Asian countries.

Table 3. Summary of PCA Results for Institutional Quality

Component	Eigenvalue	Variance Explained (%)	Cumulative (%)
Comp1	4.817	68.82	68.82
Comp2	0.970	13.85	82.67
Comp3	0.678	9.68	92.35
Comp4	0.339	4.84	97.19
Comp5	0.120	1.72	98.91
Comp6	0.042	0.61	99.52
Comp7	0.034	0.48	100.00

Source: Data Processed, 2025

Table 4 displays the eigenvector loadings of institutional indicators across seven extracted components. The first component (Comp1) shows strong and positive weights for key governance variables: Rule of Law (0.4459), Government Effectiveness (0.4378), Control of Corruption (0.4378), and Regulatory Quality

(0.4295). These high and consistent values indicate that the four indicators move closely together, forming a common dimension that reflects institutional quality. In contrast, component 2 is strongly dominated by the institution of a commercial bank (0.9409), suggesting that it captures the financial institutional aspect rather than governance quality. Other components (Comp3–Comp7) have relatively smaller loadings, implying that their contribution to the overall structure is minor. Overall, the results validate that component 1 serves as a robust composite measure of institutional quality, effectively summarizing the shared variance among governance indicators.

Descriptive statistics provide an initial overview of the data characteristics prior to empirical estimation. Table 5 reports the minimum, maximum, mean, and standard deviation for all variables included in the analysis. Institutional quality indicators display notable variation across Asian countries, with average values of –0.178 for political stability, 0.053 for rule of law, –0.009 for control of corruption, –0.466 for voice and accountability, 0.182 for regulatory quality, and 0.231 for government effectiveness. The institutional variable representing commercial banks has a mean value of 50.33, reflecting substantial differences in banking sector development across the region. Financial stability, proxied by the Bank Z-score from the World Bank's Global Financial Development Database**,** has an average value of 19.377 and a wide range of 60.965. This large dispersion indicates considerable cross-country variation in banking system soundness and resilience among Asian economies. For macroeconomic variables, GDP growth averages 3.227 percent, suggesting moderate economic expansion, while inflation averages 4.292 percent, reflecting differences in price stability across countries during the study period.

Before applying the Principal Component Analysis (PCA) and GMM estimation, a correlation test was conducted to detect multicollinearity among variables. As shown in Table 6, several institutional quality indicators—particularly Regulatory Quality, Rule of Law, and Control of Corruption—exhibited strong correlations exceeding 0.9, indicating potential multicollinearity.

To address this, the PCA technique was employed to construct a composite institutional quality index that integrates multiple governance dimensions. This approach allows for a more comprehensive and unbiased representation of governance performance across Asian countries

Table 4. Principal component analysis: Eigenvector

Name	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Unexplained
Government Effectiveness	0.4378	0.0582	0.1221	-0.3174	0.0459	-0.8124	0.1649	0
Political Stability	0.3373	-0.3146	0.5324	0.6879	0.1672	-0.0099	0.0502	0
Regulatory Quality	0.4295	-0.0143	-0.0672	-0.3407	0.7096	0.4190	0.1251	0
Rule of Law	0.4459	-0.0631	0.0167	-0.1368	-0.2508	0.1073	-0.8389	0
Voice and Accountability	0.3151	0.0476	-0.8065	0.4792	0.0295	-0.1244	0.0450	0
Control of Corruption	0.4380	-0.0765	0.0279	-0.1483	-0.6346	0.3580	0.4987	0
Institution of commercial banks	0.1418	0.9409	0.2137	0.1990	-0.0061	0.0959	-0.0095	0

Source: Data Processed, 2025

Table 5. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Government effectiveness (X1)	351	0.2311	0.881	-1.32	2.2846
Political Stability (X2)	351	-0.178	0.9452	-2.609	1.5991
Regulatory quality (X3)	351	0.1818	0.9289	-1.73	2.2522
Rule of Law (X4)	351	0.0533	0.903	-1.801	2.0042
Voice and accountability (X5)	351	-0.466	0.8654	-1.967	1.6061
Control of Corruption (X6)	351	-0.009	0.9932	-1.462	2.3341
Institution of commercial banks (X7)	351	50.330	44.288	5	204
Bank Zscore (X8)	351	19.377	10.69	1.4717	62.437
Mobile celuler (X9)	351	1E+08	3E+08	544337	2E+09
GDP growth (X10)	351	3.227	5.3216	-54.34	23.536
Population Growth (X11)	351	1.378	1.7163	-4.17	11.794
Inflation (X12)	351	4.2922	9.7807	-3.749	154.76
FDI (Y)	351	4.1495	7.8558	-37.17	58.518

Source: Data Processed, 2025

Table 6. Correlation Matrix

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X1	1.000											
X2	0.665	1.000										
X3	0.926	0.613	1.000									
X4	0.943	0.711	0.916	1.000								
X5	0.554	0.319	0.633	0.640	1.000							
X6	0.925	0.698	0.877	0.959	0.619	1.000						
X7	0.345	0.067	0.249	0.241	0.174	0.225	1.000					
X8	0.186	0.226	0.206	0.276	0.222	0.282	-0.067	1.000				
X9	0.009	-0.163	-0.135	-0.080	-0.057	-0.093	0.702	-0.056	1.000			
X10	-0.123	-0.084	-0.181	-0.158	-0.089	-0.132	0.045	-0.019	0.137	1.000		
X11	-0.122	-0.042	-0.108	-0.089	-0.143	-0.091	-0.216	0.259	-0.117	0.091	1.000	
X12	-0.264	-0.188	-0.231	-0.231	-0.084	-0.218	-0.064	-0.087	-0.027	0.133	-0.113	1.000

Source: Data Processed, 2025

In economic analysis, the lag of the dependent variable is used as an instrumental variable, and the values of the current year may usually be defined by its value. Because the lag value of a variable can provide a more accurate estimate, this study used a dynamic panel model to measure the factors that influence foreign direct investment (FDI**)** (Arellano & Bond, 1991a; Arellano & Bond, 1991b). Based on specification tests for different GMM and GMM systems, it is revealed that AR2 values have a greater probability value than alpha 5 percent, which indicates that there is no autocorrelation in the model. Furthermore, the Sargan Test, also known as the Hansen Test, examines the validity of the instrument's variable overall by evaluating samples that are comparable to the control moment. According to the Hansen test, one-step difference GMM and one-step system GMM models have a probability value less than the alpha 5 percent. As a result, it is determined that the instrument is invalid. The two-step GMM and two-step system GMM models are valid instruments because the models have a probability value more than the alpha 5 percent, and the model that is interpreted does not exhibit serial autocorrelation in errors and has valid instruments.

The results of the diagnostic tests confirm that both the two-step GMM and the two-step system GMM estimations are valid and reliable. The probability values of the Hansen test exceed

the 5 percent significance level, indicating that the instruments used in the model are valid. Moreover, there is no evidence of serial autocorrelation in the residuals, ensuring that the model specification satisfies the GMM assumptions. Following Blundell and Bond (2023), the two-step system GMM estimator is adopted because it mitigates endogeneity concerns and allows the inclusion of lagged dependent variables in the model.

As shown in Table 7, the empirical results reveal that institutional quality has a positive and significant effect on FDI in Asian countries. This finding aligns with (Tun, Azman-Saini, and Law, 2012), who argue that countries with stronger institutions are more capable of attracting foreign investment by reducing uncertainty and lowering the costs of doing business. According to Masron (2017), ASEAN institutional quality is a key factor in luring foreign direct investment inflows. Between 1990 and 2008, Mina (2012) examined the relationship between institutional quality and foreign direct investment flow to Arab countries. The findings support the notion that FDI inflows are positively impacted by bilateral investment treaties, improved government stability, and a lower chance of investment expropriation.

The significance of institutions in luring FDI inflows has received particular emphasis in the literature on FDI. First, production tends to increase with strong institutions, which draws in outside investment. Increased productivity requires robust R&D systems, financial institutions capable of funding large-scale projects, a flexible labor market, few commercial limitations, and a stable political government. (Nelson, 2008; Hodgson and Stoelhorst, 2014). The success of an institution in reducing transaction costs is a crucial factor in calculating investment returns and is a consideration for multinational companies in foreign investment. In this context, efficiency refers to the ability to reduce transaction costs, which primarily include production, shipping, risk monitoring, and business management information costs. Property rights that are not sufficiently protected, a lack of institutional systems that are adequately controlled, corruption, undeveloped financial markets, or weak incentive structures can all result in these costs (Dunning, 2004; Aziz, 2018a).

The test results show that financial stability, as measured using the Z score, has a positive contribution to FDI inflows. A high Z score indicates a low probability of default in the financial sector, or it can be said that the financial sector is quite stable. The stability of the financial sector results in easier access to finance, thereby increasing the capacity of banks to provide loans. This has a beneficial impact on the production sector, thereby increasing the attractiveness for investors. Meanwhile, increasing instability in the financial sector causes financial constraint access and reduces the performance of the business sector, which ultimately reduces investors' interest in investing. This finding is in accordance with the research of Albulescu and Ionescu (2018), which revealed that banking stability, as measured by the Z score, has a positive effect on foreign investment.

Meanwhile, the control variable, namely mobile phones, has a negative impact on FDI in Asian countries. Mobile phone ownership is used as an indicator to measure the penetration of information and communication technology. Several studies have shown that information and communication technology can drive economic growth in developing countries because it helps connect a country's production activities with the global world (Dunne and Masiyandima, 2017; Asongu & Odhiambo, 2020).

Table 7. GMM Results Across Asian Countries

Variable	Diff GMM One Step	Sys GMM Two Step	Sys GMM One Step	Sys GMM Two Step
Lagged fdi	0.1778***	0.1743***	0.640***	0.638***
	(0.065)	(0.0021)	(0.046)	(0.00299)
Institutional Quality	0.1466	0.3189***	0.598***	0.631***
	(1.9323)	(0.0935)	(0.159)	(0.0291)
Inflation	0.0564	0.0733***	0.047	0.0489***
	(0.0386)	(0.008)	(0.0322)	(0.00307)
Mobile cellular	0.000	0.000	-0.000*	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Bank Z-score	-0.1499	-0.1464***	0.0122	0.0157***
	(0.1523)	(0.0126)	(0.0313)	(0.00325)
GDP growth	0.3851***	0.3708***	0.443***	0.434***
	(0.0522)	(0.005)	(0.0587)	(0.0041)
Population growth	-0.1677	-0.2257***	-0.349*	-0.334***
	(0.2796)	(0.0301)	(0.211)	(0.0346)
Constant			0.415	0.267**
			(0.74)	(0.113)
Hansen	148	25.75	170.2	32.8
Hansen P-Value	0	0.532	0	0.526
AR1	-10.02	-1.621	-5.039	-1.574
AR1pval	0	0.105	0	0.116
AR2	1.235	0.906	1.981	1.071
AR2pval	0.217	0.365	0.0476	0.284

Source: Data Processed, 2025

The increase in economic growth driven by information and communication technology has ultimately been able to attract global companies to invest, so that mobile phones have a positive impact on FDI. However, this study shows conflicting results, namely that the use of mobile phones has a negative contribution to FDI. This is because the increasing use of information technology is also accompanied by increased risks, such as cybercrime. Cybercrime can be in the form of theft of confidential data, credit card fraud, identity fraud, and even embezzlement of funds. Countries that do not yet have adequate technological infrastructure have a great chance of facing the risk of cybercrime. This risk will ultimately reduce the level of investor confidence in investing in a country.

The population growth variable also has an unfavorable impact on FDI in Asian countries. The high rate of population growth is usually followed by macroeconomic problems, namely, increasing unemployment rates. (Alam, Alam, and Hoque, 2020) found a positive relationship between population growth and unemployment rates and a negative relationship between population growth and FDI. Uncontrolled population growth results in an excess supply of labor compared to the demand for labor, resulting in unemployment. If the unemployment problem is not resolved effectively, a more complex situation will occur, for example, increasing crime. An unsafe situation is a threat to investors and has the potential to reduce investors' desire to invest.

From the economic conditions, it is known that the inflation variable has a positive contribution to FDI. Different from most previous studies, which found a negative relationship between inflation and foreign direct investment (Nnadi & Soobaroyen, 2015; Xaypanya, Rangkakulnuwat, and Paweenawat, 2015; Agudze & Ibhagui, 2021). This study found that high inflation in Asian countries does not prevent foreign investors from investing in these countries because of good economic performance, as stated by Shaari *et al.* (2023). Meanwhile, according to Alshamsi, Hussin, and Azam (2015), inflation can have a positive

impact on FDI as long as it does not exceed a certain limit. High price movements will be responded to by the government through monetary policy by raising interest rates. For some foreign investors, interest rates are an attraction to invest, especially in the form of financial assets, because they provide higher returns. In addition, price increases also signal that a country is experiencing increased economic growth, thus encouraging foreign investors to invest (Mason & Vracheva, 2017)**.**

Another macroeconomic indicator that contributes to the increase in FDI is GDP growth. The GDP variable indicates the size of the market and shows the economic structure of a country. The positive relationship between GDP and FDI implies that foreign investors are interested in investing in countries that have large economic or market sizes (GDP value) (Aziz, 2018b)**.** This outcome is consistent with the majority of earlier research, which shows that a country's appeal to investors increases with GDP development, hence attracting more foreign direct investment. When viewed from the classification of countries categorized by income.

Table 8. Dynamic Model Estimation Results by Country Income Category

Variable	High Income	Upper Middle Income	Lower Middle Income
Lagged FDI	0.873***	0.644***	0.179***
Institutional Quality	0.417**	0.306**	0.252***
Inflation	-0.171	0.0186	-0.0317
Mobile Cellular	-0.000*	0.0000**	0.000
Financial Stability	-0.16	0.017	0.0147
GDP Growth	0.0881***	0.0299	0.423***
Population Growth	-0.350**	0.295	1.698***

Note: *** p<0.01, ** p<0.05, * p<0.10.
Source: Data Processed, 2025

Table 8 shows that institutional quality has a significant positive influence on FDI in both high-income and lower-middle-income countries. The effect is noticeably stronger in high-income countries, suggesting that institutions play a more central role in shaping investment flows there. This is likely because stronger institutions reduce transaction and information costs, making the investment environment more efficient and appealing to foreign investors. The impact is highest in high-income countries (0.873), followed by upper-middle-income countries (0.644), and is weakest in lower-middle-income countries (0.179). These findings indicate that FDI tends to be more stable and deeply rooted in developed economies.

This finding is consistent with institutional theory, which argues that as economies develop, investors increasingly prioritize governance quality, regulatory certainty, and legal protection over basic cost considerations. In high-income countries, where market size and macroeconomic stability are largely given, strong institutions serve as a key differentiating factor by lowering transaction costs, reducing information asymmetries, and ensuring contract enforcement. As a result, FDI in these economies tends to be more stable, long-term, and embedded in complex value chains.

High-income countries also tend to enjoy greater political stability, which further strengthens their attractiveness to international investors. Overall, institutional quality consistently shows a positive and significant effect on FDI across all income groups, reinforcing the idea that strong governance systems are a key driver of foreign investment. The largest effect appears in high-income countries (0.417), suggesting that investors in advanced economies place considerable value on institutional resilience. Even in lower-middle-income countries, institutional quality remains influential (0.252), highlighting its universal importance in shaping investment decisions regardless of a country’s development stage. As noted by Sabir, Rafique, and Abbas (2019),

institutional quality is a more critical determinant of FDI inflows in developed countries than in developing ones. Interestingly, however, the variable shows no significant effect on FDI in upper-middle-income countries, reflecting that institutional factors may operate differently across income categories. In lower-middle-income countries, institutional quality also remains significant, although its impact is weaker. This reflects the fact that foreign investors in developing economies are often willing to tolerate some degree of institutional weakness in exchange for higher expected returns, rapid market expansion, or cost advantages. In contrast, the insignificant effect of institutional quality in upper-middle-income countries suggests a transitional stage of development. These economies have achieved partial institutional improvements but may still face regulatory inconsistency or policy uncertainty, reducing the marginal impact of further institutional gains on investment decisions. This non-linear relationship supports the argument that institutions matter differently across stages of development, rather than exerting a uniform effect across all income groups.

The analysis shows that the proportion of mobile phone subscribers has a significant negative impact on foreign direct investment (FDI) in high-income countries, while it has no significant impact in upper-middle and lower-middle-income countries. This suggests that in developed countries, an increase in the number of mobile phone users does not always translate into increased attractiveness for investors. This is due to the fact that the telecommunications industry in high-income countries has reached a saturation point, so that the increase in consumers no longer reflects improvements in the quality of digital infrastructure that is of concern to global investors(Kshetri, 2014). The negative and significant impact of mobile phone penetration on FDI in high-income countries can be explained by the concept of technological saturation. In advanced economies, mobile and digital infrastructure is already well developed, and additional increases in the number of subscribers do not signal meaningful improvements in technological capability. Instead, high penetration rates may reflect market maturity and limited growth potential in the telecommunications sector, reducing its attractiveness for new investment. In contrast, the lack of significance in upper-middle- and lower-middle-income countries suggests that basic digital access alone is insufficient to attract FDI unless accompanied by improvements in digital quality, innovation capacity, and complementary infrastructure. This finding aligns with the view that investors respond more strongly to qualitative rather than quantitative measures of technology in developed markets.

Investment flows in high- and low-income countries are positively influenced by macroeconomic variables, one of which is GDP growth. The estimation results show that GDP growth has a positive and significant effect on FDI flows in high-income and lower-middle-income countries, but not in upper-middle-income countries. This finding confirms that economic growth is a key determinant in attracting foreign investment, especially for countries with very different economic conditions.

In high-income countries, the positive and significant GDP growth coefficient (0.0881) indicates that investors continue to consider the dynamics of economic growth even though the country already has a level of stability and strong institutions. Consistent growth signals market sustainability and strengthens profitability expectations, consistent with the market-seeking FDI theory, where investors pursue growing and stable markets (Dunning, 2000). However, what is most interesting is the much higher GDP growth coefficient in lower-middle-income countries (0.423), even higher than in high-income countries. This suggests that foreign investors are highly sensitive to economic growth in developing countries, as high growth often reflects broad market opportunities and significant profit potential. Lower-middle-income countries are typically in a phase of economic expansion, so GDP growth is a strong

signal for investors to enter before the market reaches maturity(Görg & Greenaway, 2004).

DP growth positively influences FDI in both high-income and lower-middle-income countries, although the magnitude of the effect differs substantially. In high-income economies, growth remains relevant as a signal of market sustainability and profitability, even in the presence of strong institutions and stable macroeconomic conditions. This supports the market-seeking FDI hypothesis, whereby investors continue to favor economies with consistent growth trajectories. In the context of developing economies, GDP growth not only indicates increasing domestic demand but also the success of structural reforms and increased investment attractiveness. Investors tend to view high economic growth as an indicator of stability and long-term profit potential, especially when institutional factors are not yet fully established. Therefore, economic growth can offset weaknesses in other factors, such as infrastructure or political stability. Conversely, in upper-middle-income countries, GDP growth is insignificant because this group of countries is in an in-between stage of development; they have achieved some stability but have not yet demonstrated the explosive growth of lower-middle-income countries. Investors may consider other factors, such as institutional quality or financial stability, more than growth. The much stronger effect of GDP growth in lower-middle-income countries indicates that investors are particularly sensitive to growth dynamics in developing markets. High growth rates in these economies often signal structural transformation, expanding consumer demand, and first-mover advantages, making growth a powerful catalyst for foreign investment. In such contexts, strong economic performance may partially compensate for institutional or infrastructural shortcomings. Conversely, the insignificance of GDP growth in upper-middle-income countries suggests that investors may perceive these economies as having reached a middle stage of development, where growth alone is no longer sufficient to distinguish investment opportunities. Instead, factors such as institutional depth, financial efficiency, and policy credibility may become more decisive.

These results also suggest that foreign investors do not consider the level of development to be a sufficient indicator for deciding whether to invest in high-income countries. This is because investors may choose to invest in these countries due to the presence of high-quality institutions and, additionally, the increasing costs of business operations as living standards improve. Another interesting observation is that FDI is positively impacted in lower-middle-income countries and negatively impacted by population expansion in high-income countries. Lower-middle-income countries face conditions where labor supply exceeds labor demand, resulting in lower wages or labor costs. The fact that labor costs are lower in lower-middle-income countries than in high-income countries attracts international investors to invest there. Meanwhile, production systems in high-income countries are more capital-intensive or technology-intensive, so high population growth reduces the attractiveness of high-income countries for investors.

Other variables, such as inflation and financial stability, did not significantly influence FDI in high-income, upper-middle-income, and lower-middle-income countries. This suggests that inflation is not a primary determinant for investors in investment decisions, but it still provides a directional indication consistent with theory. This insignificance occurs because investors do not consider inflation solely, but rather consider a combination of factors such as political stability, institutional quality, economic growth, and country risk. In many cases, these factors outweigh inflation(Levine & Renelt, 1992). The insignificance of financial stability across all income groups may appear counterintuitive, but it can be explained by the nature of international investment behavior. In many cases, foreign investors—particularly multinational corporations—rely on internal financing, global capital markets, or parent-company funding rather than host-country financial systems. As a result, moderate variations in domestic banking stability may not

directly influence FDI decisions, especially in countries that have already achieved a minimum threshold of financial soundness. This finding suggests that financial stability may act as a necessary but not sufficient condition for attracting FDI, with its effect becoming less visible once basic stability is achieved

The estimation results for the population growth variable show that in high-income countries, population growth has a negative and significant impact on FDI. This finding aligns with the literature stating that developed countries typically experience aging populations and mature markets, so population growth does not provide significant additional market opportunities (Bloom & Canning, 2004). In contrast, in upper-middle-income countries, the estimation results show a positive coefficient, indicating that population growth has the potential to increase investment attractiveness by expanding markets and the labor force. However, the insignificance indicates that demographic factors are not yet a strong enough influence on investor decisions. Meanwhile, in lower-middle-income countries, population growth has a strong and highly significant positive effect, indicating that demographics are a key factor attracting FDI. Population growth increases domestic consumption and demand, which are key attractions for market-seeking FDI.

CONCLUSION

This study uses the GMM analysis tool to measure the influence of institutional quality and financial stability on FDI in 39 Asian coun-tries. The main findings of this study are that there is a significant positive influence of institu-tional quality and financial stability on FDI in Asian countries. Meanwhile, the control varia-bles of GDP growth and inflation contribute positively to FDI inflows, but the mobile cellular variable has a negative impact. Analysis based on the classification of country income shows interesting findings. Institutional quality is the main factor that contributes greatly to attracting foreign investment in high-income countries, while in lower-middle-income countries, the GDP growth variable is the main determinant of FDI. The use of information technology as measured using the mobile cellular usage variable, has a negative effect on FDI in developed countries and has a positive but insignificant effect in lower-middle-income and upper-middle-income countries. Furthermore, popula-tion growth can encourage FDI inflows in low-er-middle-income countries, but this does not occur in developed countries, which shows that population growth reduces FDI. These results imply the importance of institutional quality and financial stability in encouraging FDI in Asian countries as a whole.

Some policy recommendations that can be implemented are that the government must implement effective and efficient governance, such as comprehensive law enforcement, cor-ruption control, maintaining political stability, and establishing friendly regulations to provide confidence to foreign investors, especially in lower-middle-income countries. The govern-ment must also focus on macroeconomic poli-cies to maintain financial stability, control infla-tion, and encourage GDP growth. Not only that, the government needs to implement com-prehensive regulations and supervision to pro-tect consumers and investors as information technology develops more sophisticated. In ad-dition, laws on information technology in de-veloping countries must be strengthened so that the risk of cybercrime can be minimized, there-by increasing the bargaining power of foreign investors.

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APPENDIX

Appendix 1. Dynamic model categorized by country income category

Variable	High Income				Upper Middle Income				Lower Middle Income			
	Diff GMM One Step	Diff GMM Two Step	Sys GMM One Step	Sys GMM Two Step	Diff GMM One Step	Diff GMM Two Step	Sys GMM One Step	Sys GMM Two Step	Diff GMM One Step	Diff GMM Two Step	Sys GMM One Step	Sys GMM Two Step
Lagged fdi	0.2436**	0.2446***	0.910***	0.873***	0.3876***	0.1805	0.649***	0.644***	0.0209	-0.0086	0.173**	0.179***
	(0.0953)	(0.0081)	(0.0479)	(0.0269)	(0.1247)	(0.1607)	(0.0886)	(0.169)	(0.0872)	(0.0462)	(0.0853)	(0.0137)
Institutional Quality	4.5097**	4.8546***	0.316	0.417**	-2.9168**	-9.7252**	0.306**	0.27	-4.6808*	-4.1578***	0.135	0.252***
	(1.852)	(0.6801)	(0.275)	(0.197)	(1.2744)	(4.251)	(0.141)	(0.183)	(2.5749)	(1.3988)	(0.285)	(0.0767)
Inflation	-0.0685	-0.1167***	0.14	-0.171	-0.015	-0.0380**	0.00524	0.0186	0.4551*	0.4582***	-0.0133	-0.0317
	(0.3681)	(0.0431)	(0.372)	(0.198)	(0.0177)	(0.0177)	(0.0143)	(0.0182)	(0.2549)	(0.0637)	(0.181)	(0.0243)
Mobile celuler	0	0.0000**	-1.32E-08	-0.000*	0	0.0000**	-3.64E-10	0	0	0	-1.92E-09	0
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Financial stability	-0.509	-0.4751***	-0.0301	-0.16	0.0753	0.1341*	-0.0144	0.017	0.005	0.0253	0.0475	0.0147
	(0.4219)	(0.0973)	(0.0675)	(0.114)	(0.0907)	(0.0724)	(0.0203)	(0.102)	(0.272)	(0.0919)	(0.0569)	(0.044)
GDP growth	0.2201	0.2065***	0.046	0.0881***	0.0297	0.0459	-0.00375	0.0299	0.4428***	0.4299***	0.461***	0.423***
	(0.1448)	(0.0328)	(0.174)	(0.0274)	(0.0545)	(0.0336)	(0.0566)	(0.094)	(0.0708)	(0.0269)	(0.0761)	(0.0153)
Population growth	-0.3444	-0.4087***	-0.307	-0.350**	0.2319	-0.7531	-0.018	0.295	-2.8075	-2.8950***	0.762	1.698***
	(0.3188)	(0.0713)	(0.271)	(0.152)	(0.1511)	(0.5986)	(0.132)	(0.373)	(2.905)	(0.8638)	(0.998)	(0.535)
Constant			2.094	6.047*			1.210**	-0.576			-1.036	-2.333*
			(1.986)	(3.665)			(0.536)	(3.104)			(2.159)	(1.41)
Hansen	91.74	8.19	79.08	4.48	36.8	4.04	55.92	3.1	97.11	14.56	96.2	8.79
Hansen P-Value	0	1	0	1	0.99	1	0.01	1	0	0.975	0	1
AR1	-4.292	-1.484	-3.013	-1.521	-3.967	-0.784	-6.222	-2.005	-5.96	-1.304	-1.658	-1.302
AR1pval	1.77E-05	0.138	0.00259	0.128	7.27E-05	0.433	4.91E-10	0.045	2.53E-09	0.192	0.0973	0.193
AR2	1.719	1.036	1.732	1.128	-0.607	-0.125	-0.299	-0.451	0.113	-0.0623	0.298	0.715
AR2pval	0.0857	0.3	0.0832	0.259	0.544	0.901	0.765	0.652	0.91	0.95	0.765	0.474