Jurnal Ekonomi Malaysia 60(1) 2026
http://dx.doi.org/10.17576/JEM-2026-6001-3

The Effect of Institutional Quality on Economic Growth: Evidence from 14 Asia-Pacific Economies

(*Kesan Kualiti Institusi terhadap Pertumbuhan Ekonomi: Bukti daripada 14 Ekonomi Asia-Pasifik*)

Xia Bing
Universiti Kebangsaan Malaysia

Lai Wei Sieng
Universiti Kebangsaan Malaysia

ABSTRACT

This paper examines the impact of institutional quality on the economic growth of 14 Asia-Pacific economies using the Theory of Institutional Embeddedness. A multilayer statistical model was developed, incorporating economic and institutional layers with variables such as physical capital, labor force, political institution quality, legal institution quality, and economic institution quality. Data were obtained from the World Bank's World Governance Indicators and World Development Indicators, as well as the Heritage Foundation's Index of Economic Freedom, covering the period from 1996 to 2022. The random effects model revealed the heterogeneous impact of institutional quality on total factor productivity (TFP), capital, and labor efficiency among the economies. Political institution quality was found to negatively affect TFP and capital efficiency but positively influence labor efficiency. The results also showed that legal institution quality positively affects TFP and capital efficiency but negatively influences labor efficiency, while economic institution quality negatively affects TFP and capital efficiency but positively influences labor efficiency. Theoretically, the integration of embeddedness, institutional quality, and factor efficiency into economic growth in a multilayer model offers a novel contribution. The findings also provide valuable insights for policymakers, emphasizing that institutions can leverage TFP and factor efficiency to attain high-quality economic growth.

Keywords: Institutional quality; economic growth; embeddedness theory; Asia-Pacific

ABSTRAK

Kertas kerja ini mengkaji kesan kualiti institusi terhadap pertumbuhan ekonomi 14 ekonomi Asia-Pasifik menggunakan Teori Keterbenaman Institusi. Model statistik multi-lapis telah dibangunkan, menggabungkan lapisan ekonomi dan institusi dengan pembolehubah seperti modal fizikal, tenaga buruh, kualiti institusi politik, kualiti institusi perundangan, dan kualiti institusi ekonomi. Data diperoleh daripada World Governance Indicators dan World Development Indicators oleh World Bank, serta Heritage Foundation's Index of Economic Freedom, meliputi tempoh dari 1996 hingga 2022. Model kesan rawak mendedahkan kesan heterogen kualiti institusi terhadap produktiviti faktor keseluruhan (TFP), modal, dan kecekapan buruh antara ekonomi. Kualiti institusi politik didapati memberi kesan negatif kepada TFP dan kecekapan modal tetapi mempengaruhi kecekapan buruh secara positif. Keputusan juga menunjukkan bahawa kualiti institusi perundangan memberi kesan positif kepada TFP dan kecekapan modal tetapi pengaruh negatif terhadap kecekapan buruh, manakala kualiti institusi ekonomi memberi kesan negatif kepada TFP dan kecekapan modal tetapi pengaruh positif terhadap kecekapan buruh. Secara teori, penyepaduan keterlibatan, kualiti institusi, dan kecekapan faktor ke dalam pertumbuhan ekonomi dalam model multi-lapisan menawarkan sumbangan baharu. Dapatan kajian juga memberikan pandangan berharga kepada pembuat dasar, menekankan bahawa institusi boleh memanfaatkan TFP dan kecekapan faktor untuk mencapai pertumbuhan ekonomi yang berkualiti tinggi.

Kata kunci: Kualiti institusi; pertumbuhan ekonomi; teori keterbenaman; Asia Pasifik

JEL: C51, O43, O47, O53, O56, O57
Received 1 July 2025; Revised 16 November 2025; Accepted 14 January 2026; Available online 30 April 2026

INTRODUCTION

In November 2024, the International Monetary Fund (IMF) released a report indicating that the Asia-Pacific region would account for approximately 60% of annual global economic growth. With economic growth rates projected to gradually rise over 2024 and 2025, the region's near-term prospects can be seen to be improving notably (International Monetary Fund 2024). It is evident that most Asia-Pacific economies experienced high growth rates from 1996 to 2024 (Table 1). Despite some fluctuations, the overall trend indicates an impressive economic growth trajectory. The region's performance from 2020 to 2024 is especially remarkable in light of the global economic downturn triggered by the COVID-19 pandemic.

Furthermore, in 2025, the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) issued the Asia-Pacific Trade and Investment Trends 2024/2025, reporting that the Asia-Pacific region's trade performance in 2024 exceeded the global average. These statistics on the region's positive growth demonstrate its commendable achievements, resilience, recovery, and leadership in the face of global economic uncertainty and challenging circumstances.

TABLE 1. Economic growth of Asia-Pacific economies from 1996-2024

	Real GDP growth; percent																							
Selected Asia-Pacific Economies	1996-2000			2001-2005			2006-2010			2011-2015			2016-2020			2021	2022	2023	2024 (projection)					
AEs							3.8	3.8	3.2	2.9	1.4	4.9	1.8					2.0	1.6					
Australia							4.3	3.3	2.8	2.7	2.0	2.1	3.7					2.0	1.2					
Hongkong SAR							2.7	4.3	4.0	3.0	0.1	6.4	-3.5					3.3	3.2					
Japan							1.1	1.2	0.0	1.1	-0.3	2.6	1.0					1.7	0.3					
South Korea							5.9	5.0	4.3	3.1	2.1	4.3	2.6					1.4	2.5					
New Zealand							3.0	4.1	1.2	3.0	2.5	5.2	2.7					0.6	0.0					
Singapore							5.6	4.9	6.9	4.5	1.8	8.9	3.6					1.1	2.6					
EMDEs							4.8	6.3	6.2	6.0	4.0	2.8	4.5					5.7	5.3					
Bangladesh							4.8	5.1	6.1	6.3	6.5	6.9	7.1					5.8	5.4					
Brunei Darussalam	1.4	2.1	0.7	-0.1			0.8	-1.6	-1.6									1.4	2.4					
Cambodia							7.5	9.4	6.7	7.2	5.1	3.0	5.2					5.0	5.5					
China							8.6	9.8	11.3	7.9	5.7	8.4	3.0					5.2	4.8					
India							6.1	6.5	7.0	6.5	3.9	9.1	7.2					8.2	7.0					
Indonesia							1.0	4.7	5.7	5.5	3.6	3.7	5.3					5.0	5.0					
Lao P.D.R							6.2	6.2	8.0	7.8	5.2	2.5	2.3					3.7	4.1					
Malaysia	5.0	4.8	4.5	5.3			2.8	3.3	8.7									3.6	4.8					
Mongolia	2.7	6.5	6.6	10.3			3.2	1.6	5.0									7.4	5.5					
Myanmar	8.5	12.9	11.1	7.3			3.2	-12.0	2.0									2.5	1.0					
Nepal	4.8	3.4	4.4	4.3			4.3	4.8	5.6									2.0	3.1					
Philippines	3.7	4.7	5.0	6.0			3.4	5.7	7.6									5.5	5.8					
Thailand	0.9	5.5	3.8	3.0			1.6	1.5	2.6									1.9	2.8					
Vietnam	7.0	6.9	6.3	6.2			6.3	2.6	8.0									5.0	6.1					
Pacific Island Countries	1.4	2.4	1.6	3.0			0.2	-3.4	1.0									2.7	3.9					

**Source*: Data for 2022-2024 was obtained from IMF, the Regional Economic Outlook 2023 & 2024, and IMF staff estimates and projections; data for other years was calculated using data from the World Bank.
**Note:* AEs=Advanced Economies; EMDEs=Emerging Markets and Developing Economies, excluding Pacific Island countries and other small states.

Notwithstanding the positive growth trend, there exists a significant economic imbalance between advanced economies (AEs) and emerging markets and developing economies (EMDEs) in the Asia-Pacific region. The gap between these countries remained relatively wide from 1996 to 2024, with the economic growth rate of EMDEs reaching nearly three times that of AEs from 2022 to 2024. Ensuring balanced growth among Asia-Pacific economies thus remains a key challenge. Various reasons may contribute to this situation, such as labor market imbalances, market failures, and uneven resource distribution. Among these, institutional quality is widely recognized as a pivotal factor influencing economic growth and outcomes (Acemoglu & Robinson 2012; North 1990).

As one of the most influential theoretical perspectives on how institutions impact economic growth, North's (1990) New Institutional Economics Theory emphasizes the importance of institutional factors for a nation's economic development. However, this theory tends to overemphasize the role of the institution while underplaying the social context. It ignores the interaction between institutional environments and economic activities, limiting its ability to explain how economic growth is shaped by both social and institutional factors. On the other hand, these are the core ideas of Embeddedness Theory. Proposed by Polanyi (1944), Embeddedness Theory explicates how economic outcomes are shaped by the interaction of economic activities with social, institutional, and cultural factors. The economy is thus embedded and intertwined within both economic and non-economic institutions, as well as within social networks (Granovetter 1985).

Based on Embeddedness Theory, the economic growth of Asia-Pacific nations depends not only on market forces but also on their integration within broader social and institutional environments. These economies exhibit substantial variations in their political frameworks, legal systems, and economic policies, which according to North (1990), constitute formal institutions. These institutional variations can either facilitate or hinder economic activities and investment, ultimately affecting each country's business climate and overall economic performance. This complexity of institutional structures allows economies to adopt different response strategies in the face of similar external shocks, thereby exacerbating the heterogeneity of their economic growth. Embeddedness Theory thus provides a more comprehensive and integrated explanation of imbalanced economic development in the region. Consequently, it is necessary to analyze the impact of institutions on economic growth from the embeddedness perspective, which is precisely the aim of this study.

This study adds value to the wealth of literature that has established institutions as a key influencing factor of economic growth. Notably, it analyzes the effect of institutional quality on economic growth from the perspective of Embeddedness Theory, positioning institutions and economic growth at two distinct levels of analysis. Corresponding with the theory, a multilevel statistical model is employed, allowing for a more comprehensive exploration of the complex relationship between institutional quality and economic growth. This methodological approach also enriches the existing literature by offering new empirical evidence and insights that can inform policy formulation.

The remainder of this paper is organized as follows: Section 2 reviews the existing theoretical and empirical literature; Section 3 presents the methodology, in which a multilevel model is constructed to empirically analyze how institutions

influence economic growth based on Embeddedness Theory; Section 4 interprets and discusses the empirical results; and Section 5 concludes the findings of this paper.

LITERATURE REVIEW

THE EMBEDDEDNESS THEORY OF INSTITUTIONAL QUALITY AND ECONOMIC GROWTH

The impact of institutions on economic growth has long been a topic of interest in academic research. Institutional theories like New Institutional Economics propose that the quality and nature of institutions fundamentally shape the trajectory of economic development, placing institutions at the cornerstone of economic growth. In their representative work on New Institutional Economics, North and Thomas (1973) discussed the root causes of economic growth, arguing that institutions are the decisive factor and establishing a theoretical framework for institutional determinism. North (1990) subsequently pointed out the key role of institutions in economic performance and elaborated on the importance of institutional change in economic development.

Although institutions are widely recognized as crucial drivers of economic development, there are also limitations to their role. As such, to contrast the institutional determinism viewpoint, Institutional Embeddedness Theory has emerged as another theoretical perspective on the function of institutions in economic development. Polanyi (1944) was the first to introduce the concept of embeddedness, proposing that economic activities are embedded within social institutions and cannot be analyzed in isolation from their societal contexts. Polanyi (1968) went on to deepen this notion by elucidating that in non-market economies, economic activities are ingrained within institutional frameworks.

Subsequently, Granovetter (1985) expanded the Embeddedness Theory by adopting a different perspective, which emphasized the significance of interpersonal relationships and relational networks in shaping economic actions. He argued that economic transactions are embedded within social structures that both influence and are influenced by the economic behavior of individuals and organizations. Granovetter (1990) further distinguished between two forms of embeddedness: relational embeddedness and structural embeddedness.

While Granovetter's research focused on interpersonal and relational networks, other scholars have since extended the embeddedness model to various domains. Zukin and DiMaggio (1990) categorized embeddedness into four types: cognitive, cultural, structural, and political. Political and cultural embeddedness can be interpreted as formal and informal institutional embeddedness, respectively, whereas structural embeddedness parallels Granovetter's (1990) concept of relational embeddedness. Beckert (1996) argued that customs, institutions, structures, and rights form the institutional system, collectively constituting the embeddedness of economic actors. Similarly, Dequech (2003) observed strong commonalities between cultures and institutions.

EMPIRICAL STUDIES ON THE INFLUENCE OF INSTITUTIONAL QUALITY ON ECONOMIC GROWTH IN ASIA-PACIFIC

Tran et al. (2021) examined the relationship between institutional quality and economic growth across 48 Asian countries over the period from 2005 to 2018. To explore the non-linear nature of this relationship, their model incorporated squared institutional variables and employed panel data regression for analysis. The empirical findings revealed that institutional quality plays a crucial role in economic development, with its impact being more pronounced in lower-income Asian countries compared to higher-income ones. They further found that the economic growth of Asian countries is affected by inflation, trade openness, and infrastructure.

Unlike Tran et al. (2021), Chung and Kim (2021) aimed to explain the Asian Growth Paradox by exploring the interaction between informal and formal institutions. Formal institutions were measured by the rule of law indicator from the World Governance Indicators (WGI), while informal institutions were represented by social trust, measured as the percentage of people responding "yes" to the Gallup World Poll question, "Generally speaking, would you say that most people can be trusted?" The data were averaged for the period from 2009 to 2011, based on the UNDP's Human Development Index. Chung and Kim (2021) found distinct interaction patterns between informal and formal institutions across states: the interaction effect was negative and marginal in developed countries, positive and significant in developing countries, and insignificant in Asian Paradox states.

More recently, Nayak and Pradhan (2024) divided 47 Asian countries into four income-level groups and investigated the impact of institutional quality on economic performance over the period between 1981 and 2021. They selected six comprehensive governance indicators to construct an institutional quality index, and used three indicators as measures of economic performance: real GDP, real GDP per capita, and the Human Development Index. The results of panel regression, cointegration tests, and autoregressive methods demonstrated the significant positive effect of institutional quality on economic performance in Asia, particularly in high-income countries.

Empirical studies have also incorporated other influencing factors of economic growth. For example, Ahmed et al. (2022) examined the role of institutional quality and financial development in promoting green economic growth in South Asian economies (Pakistan, India, Bangladesh, Nepal, and Sri Lanka) from 2000 to 2018. Data were obtained from the World Bank, with institutional quality measured through a composite index encompassing six highly correlated

dimensions. Their results showed that both institutional quality and financial development positively affect green economic growth, meaning that South Asian countries can enhance economic sustainability by improving legislation to reduce carbon emissions, increasing access to environmentally friendly technologies, and improving overall quality of life.

In addition to financial development and institutional quality, Huo et al. (2023) incorporated natural resources and population growth as predictors of China's economic growth from 1977 to 2021. They found that natural resources and institutional quality (measured as the degree of "trade openness of a country") significantly increased economic development during that period, while population growth and financial development significantly decreased it. Lastly, gross fixed capital formation showed a negative but negligible impact on economic growth.

In recent years, significant research has been conducted on the influence of formal institutions on economic growth in ASEAN countries. Sari and Prasetyani (2021) used a fixed-effects model to assess the impact of various formal political institutional quality indicators (e.g., voice and accountability, regulatory quality, rule of law, political stability, and control of corruption) on GDP growth in ASEAN countries. The fixed-effects model is a panel data regression technique that considers unobserved time-invariant heterogeneity in panel data. By applying this model, Sari and Prasetyani (2021) effectively controlled for unobserved heterogeneity that could otherwise introduce bias into the regression analysis. They found that accountability, regulatory quality, and the rule of law significantly and positively affect economic growth in ASEAN countries.

Using similar institutional variables (i.e., rule of law, government effectiveness, and regulatory quality), Aida et al. (2023) focused on the impact of tourism, foreign direct investment, and institutions on economic growth in 10 ASEAN member countries from 2003 to 2021. However, contrary to Sari and Prasetyani (2021), they found that only rule of law and government effectiveness have significant positive effects on economic growth of ASEAN countries, whereas regulatory quality has no impact.

EMPIRICAL STUDIES ON INSTITUTIONAL EMBEDDEDNESS

Empirical studies grounded in Institutional Embeddedness Theory have sought to operationalize the concept of embeddedness, demonstrating how social networks and trust significantly affect firms' economic performance, innovation, and entrepreneurship. For example, using a foundational perspective, Salder (2023) explored the impact of embeddedness on the resource dependency and decision-making of small firms in creative industries. The study adopted a case study approach to analyze six creative organizations in the contemporary performing arts industry in the English West Midlands. Based on a novel SME diagnostic framework, semi-structured interviews were conducted with the creative and operational leads of each enterprise to identify forms of embeddedness and their interactions in key areas of enterprise development. Salder (2023) concluded that entrepreneurship and firm development are dependent on firms' foundational embeddedness, which acts through entrepreneurs' values to affect organizational resource utilization and decision-making.

Sahasranamam et al. (2022) focused on Indian multinational enterprises to examine the impact of dual institutional embeddedness on their home-country corporate social responsibility (CSR) engagement. They combined data from the Center for Monitoring the Indian Economy PROWESS database, the Reserve Bank of India's foreign exchange department, and the Responsible Competitiveness Index, and constructed an unbalanced panel dataset of 2,771 firm-year observations. Their study indicated that internationalization, depth of involvement in stringent CSR contexts, and home-country mandatory CSR regulations all positively affect the home-country CSR engagement of Indian multinationals. Theoretically, Sahasranamam et al.'s (2022) findings expand the literature on international CSR and dual institutional embeddedness in emerging markets. Practically, they provide decision-making guidance for Indian regulators and corporate managers.

Röell et al. (2024) investigated the institutional strategies of long-standing multinational enterprise subsidiaries in emerging markets. Four Dutch consumer goods subsidiaries operating in Indonesia were selected for a multiple case study approach. Indonesia hosts a complex institutional environment with economic nationalism and strong cultural traditions, presenting additional challenges to Dutch firms due to their colonial history. Data from observations, interviews, and archival research were analyzed using NVivo software, revealing that long-standing multinational subsidiaries adopt a variety of institutional strategies to deal with institutional frictions. Political, cultural, and cognitive embeddedness help coordinate pressures between home and host countries, although certain practices may cause controversy (Röell et al. 2024).

Entrepreneurship and social networks have also been key focus areas of institutional embeddedness research. Wigren-Kristoferson et al. (2022) reviewed 198 articles on embeddedness in entrepreneurship to identify conceptualizations and applications at the early, mature, and exit stages of entrepreneurship. Their analysis discovered that entrepreneurs can be embedded in several environments concurrently. The study provided a comprehensive perspective on the multi-stage relationship between embeddedness and entrepreneurship, emphasizing the multifaceted nature of embeddedness and its impact on entrepreneurial outcomes.

Moreover, Nowak and Raffaelli (2022) introduced social innovation into institutional structures based on Polanyi's Embeddedness Theory. They analyzed the distinct roles of social, network, and institutional embeddedness in the use of local resources and examined how social outcomes shape entrepreneurial environments. Through two ethnographic case studies of social enterprises in the United Kingdom, Nowak and Raffaelli (2022) revealed the different levels and types of embeddedness that affect these enterprises. Their findings further showed how the institutional context influences the

evolving landscape of social innovation as well as the abilities of social enterprises to navigate and respond to ongoing challenges.

Some studies have also applied multilevel regression methods to empirically research embeddedness. Liu and Zhang (2022), for instance, examined the link between economic environment factors and the factor efficiency of economic growth. They established a multilayer statistical model by incorporating embedded economic variables (financial development, opening-up to the outside world, and government expenditure) into the economic growth model to explain differences in factor efficiency across Chinese provinces. The explanatory proportion of the embedded variables to variance components was then calculated to evaluate the factors' explanatory power towards economic growth efficiency.

Although the review above demonstrates the existence of empirical research on the relationship between institutional quality and economic growth, there are still shortcomings in prior studies. First, institutional quality is generally treated as any other variable equivalent to other growth factors, failing to reflect the embedded relationship between institutions and the economy. Second, few empirical studies have employed the multilayer approach to analyze the nexus between institutional quality and economic growth. Most methods used thus far in the literature are unsuitable for processing data with hierarchical relationships, making it difficult to capture the data structure and correlations between different levels.

METHODOLOGY

MODEL DERIVATION

According to Embeddedness Theory and economic theories, economic growth is influenced not only by internal driving forces (e.g., capital and labor) but also by its embeddedness within the external institutional environment. Based on the Cobb–Douglas production function, economic growth is known to be determined by capital and labor. Accordingly, the economic growth model can be expressed as follows:

$$GDP_{ij} = A_{ij} K_{ij}^{\beta_{1j}} L_{ij}^{\beta_{2j}} e^{r_{ij}} \qquad (1)$$

By taking the logarithm of both sides of Equation (1), the Layer 1 model is expressed as Equation (2) below:

$$lnGDP = lnA_{ij} + \beta_{1j} \ln(K_{ij}) + \beta_{2j} \ln\left(L_{ij}\right) + r_{ij} \qquad (2)$$

Among them, i represents the year, j denotes the countries, $LnGDP$ is the gross domestic output, LnK refers to physical capital input, LnL represents labor input, r_{ij} is the error term, A_{ij} indicates total factor productivity (TFP), and β_{1j}, β_{2j} are the elasticity coefficients representing the efficiency of capital and labor, respectively.

Several researchers (Chang 2023; Liu & Li 2002; Wang 2007; Zhong & Gong 2008; Zhou & Tao 2019) have studied how institutions affect economic growth through TFP and factor efficiency, providing empirical evidence of the relationship between institutional quality and efficiency. Based on these studies, the following models are constructed:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} X_{1j} + \gamma_{02} X_{2j} + \cdots \gamma_{0n} X_{nj} + \mu_{0j} = A_{ij} \qquad (3)$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} X_{1j} + \gamma_{12} X_{2j} + \cdots \gamma_{1n} X_{nj} + \mu_{1j} \qquad (4)$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21} X_{1j} + \gamma_{22} X_{2j} + \cdots \gamma_{2n} X_{nj} + \mu_{2j} \qquad (5)$$

where $(X_{1j}, X_{2j}, \ldots, X_{nj})$ represent the variables for institutional quality.

Equations (3), (4), and (5) can be summarized into a single function, as shown in Equation (6) below:

$$\beta_{pj} = \gamma_{p0} + \sum_{t=1}^{n} \gamma_{pt} X_{tj} + \mu_{pj} \qquad (6)$$

Where t = (1, 2, 3..., n), p = (0, 1, 2), j stands for the countries, γ_{p0} is the intercept, and γ_{pt} is the coefficient of the institutional variables.

From Equations (2) to (5), β_{pj} represents the input efficiency in the economic layer (Layer 1) and serves as the dependent variable in the institutional layer (Layer 2), embodying the embedded relationship between institutions and economic growth. In line with Embeddedness Theory, the complete multilayer model with two layers can be expressed as follows:

$$\text{Layer 1} \quad lnGDP = \beta_{0j} + \beta_{1j} \ln(K_{ij}) + \beta_{2j} \ln\left(L_{ij}\right) + r_{ij} \qquad (7)$$

$$\text{Layer 2} \quad \beta_{pj} = \gamma_{p0} + \sum_{t=1}^{n} \gamma_{pt} X_{tj} + \mu_{pj} \qquad (8)$$

Where t = (1, 2, 3..., n), p = (0, 1, 2), j stands for the countries, r_{ij} is the random error term of Layer 1, and μ_{pj} is the random error term of Layer 2.

VARIABLES AND DATA SOURCES

Following Asghar et al. (2020), three variables were selected to represent institutional quality: political institutional quality, legal institutional quality, and economic institutional quality. Political institutional quality was measured using the World Bank's WGI "Political Stability and Absence of Violence" and "Voice and Accountability," averaged to form a composite indicator. Legal institutional quality was calculated as the average of four indicators: Rule of Law, Government Effectiveness, Regulatory Quality, and Control of Corruption. Economic institutional quality was represented by the Index of Economic Freedom from the Heritage Foundation in this study. Economic variables included GDP, Gross Fixed Capital Formation, and Total Labor Force, which represented economic growth, physical capital, and labor input, respectively. These are commonly used measures in economic growth studies, and their data was obtained from the World Development Indicators (WDI).

The data for this study covered the period from 1996 to 2022. Due to data availability, 14 Asia-Pacific economies were selected for analysis, including five AEs (Australia, Japan, South Korea, New Zealand, and Singapore) and nine EMDEs (China, Malaysia, Bangladesh, India, Indonesia, Nepal, Mongolia, Thailand, and Vietnam). Details of the variables and data sources are presented in Table 2.

TABLE 2. Variables and data sources

Variables	Indicators	Data sources
Dependent variable		
Economic growth	GDP (USD constant 2015)	WDI
Independent variables		
Physical capital	Gross fixed capital formation	WDI
Labor force	Total amount of labor force	WDI
Political institution	Political stability no violence	WGI
	Voice and accountability	WGI
Legal institution	Rule of law	WGI
	Government effectiveness	WGI
	Regulatory quality	WGI
	Control of corruption	WGI
Economic institution	Economic freedom index	www.heritage.org

NULL MODEL ANALYSIS

The null model serves as the benchmark and starting point for the multilayer statistical analysis. It assumes no differences among individuals or groups, treating all observations as originating from a single population and considering only the population average. The null model typically includes a single random intercept term, representing the random effects for individuals or groups. Its primary purpose is to evaluate whether individual or group differences are significant in the observed data, thus determining the necessity for a random effects model. Since the null model includes no independent variables, the two model layers are expressed as follows:

$$\text{Layer 1:} \quad LnGDP = \beta_{0j} + r_{ij} \qquad (9)$$

$$\text{Layer 2:} \quad \beta_{0j} = \gamma_{00} + \mu_{0j} \qquad (10)$$

Where $LnGDP$ is the dependent variable of Layer 1, β_{0j} is the intercept of Layer 1 and the dependent variable of Layer 2, γ_{00} is the intercept of Layer 2, r_{ij} is the systematic error, and μ_{0j} is the random error term.

RANDOM EFFECTS MODEL ANALYSIS

The random effects model incorporates random effects for individuals or groups to capture unobserved differences. These random effects can be seen as individual or group-specific random variables, with values independently sampled from a random distribution. In this model, one or more random effect terms are included alongside the observed error term to account for within-group variability. The variance of the random effects can be estimated using methods such as maximum likelihood estimation or generalized least squares, enabling the assessment of the random effects' explanatory power relative to the observed data. The random effects model in this study added Layer 1 variables to the null model. The model layers can be represented as follows:

Layer 1 model: $LnGDP = \beta_{0j} + \beta_{1j}Lnk + \beta_{2j}LnL + r_{ij}$ (11)

Layer 2 model: $\beta_{0j} = \gamma_{00} + \mu_{0j}$ (12)

$$\beta_{1j} = \gamma_{10} + \mu_{1j} \quad (13)$$

$$\beta_{2j} = \gamma_{20} + \mu_{2j} \quad (14)$$

where $LnGDP$ is the dependent variable of Layer 1, $LnK,\ LnL$ are the independent variables of Layer 1, and β_{0j} is the intercept of Layer 1. $\beta_{1j},\ \beta_{2j}$ represent capital and labor efficiency, respectively, and are also the dependent variables of Layer 2. $\gamma_{00}, \gamma_{10}, \gamma_{20}$ are the intercepts of Layer 2, r_{ij} is the systematic error term, and $\mu_{0j}, \mu_{1j}, \mu_{2j}$ are the random error terms.

FULL MODEL ANALYSIS

The full model extended the random effects model by incorporating Layer 2 independent variables. It considered both individual or group differences and the effects of these independent variables while controlling for random effects. Typically, the full model includes both fixed and random effects. By analyzing the full model, the influence of independent variables on dependent variables can be evaluated to provide more comprehensive explanations of individual or group differences. The significance and explanatory power of independent variables can be assessed by comparing the goodness-of-fit measures between the full model and the random effects model. To explain the variation in TFP and input efficiency among different economies, the full model introduced Layer 2 institutional variables. The Layer 1 and Layer 2 equations can be represented as follows:

Layer 1 $lnGDP = lnA_{ij} + \beta_{1j}\ln(K_{ij}) + \beta_{2j}\ln(L_{ij}) + r_{ij}$ (15)

Layer 2 $\beta_{0j} = \gamma_{00} + \gamma_{01}PS_j + \gamma_{02}RL_j + \gamma_{03}EF_j + \mu_{0j}$ (16)

$$\beta_{1j} = \gamma_{10} + \gamma_{11}PS_j + \gamma_{12}RL_j + \gamma_{13}EF_j + \mu_{1j} \quad (17)$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}PS_j + \gamma_{22}RL_j + \gamma_{23}EF_j + \mu_{2j} \quad (18)$$

Where $LnGDP$ is the dependent variable of Layer 1, $LnK,\ LnL$ are the independent variables of Layer 1, and PS_j, RL_j, EF_j stand for political institutional quality, legal institutional quality, and economic institutional quality, respectively. β_{0j} is the intercept of Layer 1 and $\beta_{1j},\ \beta_{2j}$ represent capital efficiency and labor efficiency, which are the dependent variables of Layer 2. $\gamma_{00}, \gamma_{10}, \gamma_{20}$ are the intercepts of Layer 2, r_{ij} is the systematic error term, and $\mu_{0j}, \mu_{1j}, \mu_{2j}$ are the random error terms.

RESULTS AND DISCUSSION

Based on the collected data, empirical analysis was carried out sequentially through the null model, random effects model, and full model. The empirical estimations were conducted using the Hierarchical Linear Model statistical software.

DECOMPOSITON OF THE TOTAL VARIATION OF ECONOMIC GROWTH AMONG DIFFERENT ECONOMIES (NULL MODEL ANALYSIS)

The null model analysis was conducted to assess the appropriateness of using a multilevel statistical model by examining the significance of the random error term μ_{0j}. Intra-Class Correlation (ICC) was utilized to determine the extent to which the variation in the dependent variable can be explained by the second layer (institutional level) before incorporating any independent variables. ICC is calculated as the variance component of Layer 2 divided by the sum of the variance components of Layers 1 and 2. If the ICC value exceeds a certain threshold, it indicates that the second layer significantly contributes to the interpretation and impact of the dependent variable in the first layer, justifying the appropriateness of a multilevel statistical model for analysis. Conversely, if the ICC value is relatively small, a multilevel statistical model may not be necessary, and an ordinary multiple linear regression can be employed instead.

TABLE 3. Decomposition results of economic growth variation

Random effect	Standard deviation	Variance component	df	Chi-square	P-value	ICC
Layer 2 μ_{0j}	1.874	3.512	13	7737.733	0.000	0.95
Layer 1 r_{ij}	0.399	0.159				

The results of the null model analysis (Table 3) show that the regression coefficient is statistically significant (p=0.000). This confirms that there are significant differences in the average economic growth value across economies. The ICC value of 95.66% [3.512 / (3.512+0.159)] indicates that institutional factors explain approximately 95% of the total variation in economic growth. On the other hand, basic economic inputs account for only about 5%, making them insufficient for elucidating economic growth differences. Therefore, it was reasonable and necessary for this research to introduce institutional factors and apply a multilayer statistical model for analysis.

HETEROGENEITY TEST OF FACTOR EFFICIENCY OF ECONOMIC GROWTH (RANDOM EFFECT MODEL)

To appropriately introduce institutional factors into the model, it was necessary to first perform a random effect test on the efficiency of basic factors of economic growth. This test determined whether there are significant differences in factor efficiency between economies. If heterogeneity exists, institutional variables must be incorporated in the model as potential variables affecting efficiency differences. From the results of the heterogeneity test (Table 4), the coefficients of the Layer 1 variables (Lnk and LnL) are both positive and significant. This indicates that the efficiencies of physical capital and labor play important roles in promoting economic growth.

TABLE 4. Results of factor efficiency heterogeneity test for economic growth

Layer 1 Independent variables	Regression coefficient and significance test			Variance component and significance test		
	Coefficient	Standard error	T-ratio	Variance component	Chi-square	P-value
Intercept 1, β_{0j}						
Intercept 2, γ_{00}	26.538***	0.483	54.937	3.518***	308099.333	0.000
LnK slope, β_{1j}						
Intercept 2, γ_{10}	0.198***	0.050	3.901	0.035***	502.222	0.000
LnL slope, β_{2j}						
Intercept 2, γ_{20}	1.473***	0.236	6.226	0.710***	100.530	0.000

Note:* * indicates significance at the 1% level.

The regression coefficient of capital efficiency is 0.198 and significant at the 1% level (p = 0.000), meaning that capital efficiency has a positive effect on economic growth. In other words, an increase in the proportion of physical capital investment promotes the economic growth of all the sample countries. The enhancement of capital efficiency directly facilitates the optimal utilization of production factors (e.g., machinery, equipment, etc.), resulting in the increased production of goods and services, elevated productivity levels, and accelerated economic growth. Moreover, improvements in capital efficiency spur technological advancements and innovation. The widespread adoption of new processes and technologies enhances product quality and propels research and development efforts for new product creation, ultimately driving economic growth.

The coefficient of labor efficiency is 1.473 and significant at the 1% level (p = 0.000), suggesting that the labor force has a positive effect on economic growth. This may be attributed to the large number of people in the Asia-Pacific region, offering a vast workforce for production and manufacturing. Although the population growth rate of some countries has decreased or even regressed in recent years, the overall population size of the region creates an input and flow of labor that optimizes labor allocation and thus, stimulates economic growth.

From the variance components in the above results, it is observed that the variance of the intercept (TFP) is 3.518, the variance component of capital efficiency is 0.035, and the variance component of labor efficiency is 0.710. These results are all significant at the 1% level (p = 0.000), indicating that the coefficients for TFP, capital efficiency, and labor efficiency differ significantly across Asia-Pacific economies. As such, it can be confirmed that there is heterogeneity in factor efficiency. This heterogeneity can, to some extent, be explained by institutional factors. Therefore, the three institutional variables (political institutional quality, legal institutional quality, and economic institutional quality) were introduced into the subsequent full model for further analysis.

IMPACT OF INSTITUTION QUALITY ON THE FACTOR EFFICIENCY OF ECONOMIC GROWTH (FULL MODEL ANALYSIS)

TABLE 5. Results of institutional variable effects

variables	Coefficient	Standard error	T-ratio	df	P-value
Intercept 1, β_{0j}					
Intercept 2, γ_{00}	40.662***	6.198	6.560	10	0.000
PS_j, γ_{01}	-2.035**	0.799	-2.548	10	0.029
RL_j, γ_{02}	4.905***	1.378	3.560	10	0.006
EF_j, γ_{03}	-0.247**	0.103	-2.396	10	0.038
Lnk slope, β_{1j}					
Intercept 2, γ_{10}	2.111***	0.402	5.252	10	0.000
PS_j, γ_{11}	-0.188***	0.049	-3.860	10	0.004
RL_j, γ_{12}	0.392***	0.083	4.684	10	0.001

EF_j, γ_{13}	-0.032***	0.007	-4.808	10	0.001
LnL slope, β_{2j}					
Intercept 2, γ_{20}	-10.514***	2.145	-4.902	10	0.000
PS_j, γ_{21}	1.096***	0.192	5.699	10	0.000
RL_j, γ_{22}	-3.113***	0.464	-6.703	10	0.000
EF_j, γ_{23}	0.204***	0.035	5.850	10	0.000
Random effect	Standard deviation	Variance component	Chi-square	df	P-value
Intercept 1, μ_{0j}	1.576	2.483***	167396.70025	10	0.000
LnK slope, μ_{1j}	0.095	0.009***	60.797	10	0.000
LnL slope, μ_{2j}	0.276	0.076**	19.777	10	0.031
Layer 1, r_{ij}	0.063	0.004	—	—	—

**Note:* Significance is indicated as * p < 0.10, ** p < 0.05, *** p < 0.01

From the results of the full model analysis (Table 5), the regression coefficient of the first institutional factor (i.e., political institutional quality) on TFP is –2.035 with a p-value of 0.029 (< 0.05), indicating a significant negative effect. When political institutions overly emphasize stability and continuity, they become rigid and inflexible, making them struggle to adapt to rapidly changing economic and social environments. For instance, during periods of rapid technological revolution, traditional political decision-making mechanisms may be unable to adjust in a timely manner. Policy support for emerging industries subsequently lags behind, hindering the development of new economic growth sectors and constraining improvements in TFP.

The regression coefficient of political institutional quality on capital efficiency is –0.188 with a p-value of 0.004 (< 0.01), also indicating a significant negative effect. Even well-crafted political institutions, if implemented unevenly, can undermine capital efficiency. For example, property rights protections may overly favor large state-owned enterprises while private enterprises, particularly small and medium-sized ones, receive limited protection. Such disparity exposes private firms to heightened business risks and uncertainties, making them reluctant to undertake large-scale, long-term investments. Ultimately, this results in declining capital activity and lower capital allocation efficiency.

The regression coefficient of political institutional quality on labor efficiency is 1.096 with a p-value of 0.000 (< 0.01), demonstrating a significant positive effect. Well-designed political institutions can promote employment, enhance worker welfare, develop job skills, and protect labor rights, thereby fostering economic growth. Effective political bodies ensure a minimum standard of living, reduce poverty, and improve overall well-being through income support policies. Comprehensive labor laws also safeguard employee rights, while stable macroeconomic policies (e.g., inflation control, fair taxation, sound monetary management) indirectly encourage employment and cultivate a healthy labor market.

The regression coefficient of the second institutional factor, legal institution quality, on TFP is 4.905 with a p-value of 0.006 (< 0.01), verifying a significant positive effect. A strong legal framework is vital for protecting property rights, upholding the rule of law, and promoting economic activity. It stimulates innovation, investment, and technological advancement, while fostering competition and curbing monopolies. These phenomena boost market confidence, facilitating resource utilization for productive endeavors and increasing TFP. Consistent with this finding, He et al.'s (2022) comparative study of different industries showed that the Environmental Protection Tax Law significantly promotes the TFP of heavily polluting enterprises.

The regression coefficient of legal institution quality on capital efficiency is 0.392 with a p-value of 0.001 (< 0.01), confirming a significant positive effect. A transparent and predictable legal framework creates a favorable climate for businesses and investors by enabling better risk assessment and future planning. This stability fosters trust and long-term investment, which are crucial for capital accumulation. Effective legal institutions also encourage investment and innovation by protecting private and intellectual property rights. Additionally, a well-functioning legal system enforces antitrust laws, prevents monopolistic practices, and maintains fair competition, altogether allowing efficient capital utilization across the market.

The regression coefficient of legal institution quality on labor efficiency is –3.113 with a p-value of 0.000 (< 0.01), indicating a significant negative effect. Although labor laws are designed to protect workers' rights, overly strict regulations can create challenges for businesses. Rigid hiring and firing policies reduce employer flexibility, discouraging new employment and limiting labor market agility. Mandatory social security contributions and benefits further raise labor costs, especially during economic downturns, leading to hiring freezes or benefit cuts. High minimum wage policies can also increase hiring costs, prompting businesses (especially SMEs) to stop hiring new staff or lay off existing staff, thus limiting opportunities for low-skilled workers.

The regression coefficient of economic institutional quality on TFP is –0.247 with a p-value of 0.038 (< 0.05), indicating a significant negative effect. Economic institutions are typically structured in alignment with current industrial and economic contexts. When new industries emerge, existing high-quality economic institutions may fail to promptly accommodate their developmental requirements. Consequently, the rights and interests of innovators within these emerging sectors may not be effectively protected, dampening innovation and slowing TFP growth. Furthermore, in regions with lower economic development and weaker industrial foundations, applying the same economic institutions as those in advanced economies can impede the growth of small and micro enterprises. This may ultimately reduce the efficiency of resource allocation and exert a negative influence on TFP.

The regression coefficient of economic institutional quality on capital efficiency is –0.032 with a p-value of 0.001 (< 0.01), which shows a significant negative relationship. When economic institutions provide market players an excessively

permissive environment without adequate regulations and restrictions, they may trigger chaotic competition. In a bid to capture market share, enterprises might recklessly scale up production and engage in destructive price wars, resulting in a substantial waste of resources as well as the misallocation of capital. Additionally, the economic system's inability to effectively manage externalities can erode capital efficiency. For example, if industries can freely emit pollutants without bearing the full environmental costs, the true economic value of production becomes distorted, and resources are diverted away from more efficient and sustainable uses. This ultimately undermines the overall efficiency with which capital is deployed in the economy.

Finally, the regression coefficient of economic institutional quality on labor efficiency is 0.204 with a p-value of 0.000 (< 0.01), implying that the effect is significantly positive. A robust economic institution promotes labor mobility and flexibility, thus enhancing overall workforce efficiency. It also facilitates inter-industry and interregional transitions, which enables workers to find suitable employment opportunities more easily. Such labor mobility optimizes labor resource allocation, minimizes inefficiencies, and fosters knowledge spillovers, ultimately contributing to innovation and productivity growth.

CONCLUSION

This study investigated the relationship between institutional quality and economic growth in 14 economies across the Asia-Pacific region from 1996 to 2022. Unlike prior literature, we analyzed the uneven economic growth in the region from the perspective of institutional embeddedness, constructing a two-level multilevel statistical approach to empirically examine factor efficiency heterogeneity in economic growth across the countries. The ICC value of the null model provided an empirical rationale for using a multilevel model in subsequent analyses. Next, the results of the random effects model demonstrated significant differences in the impact of institutional embeddedness on the efficiency of economic growth factors among economies.

The heterogeneity of factor efficiency was further analyzed by developing a full model that integrated two levels of institutional factors and economic growth factors. According to the full model results, the three dimensions of institutional quality (political, legal, and economic) have distinct impacts on TFP, capital efficiency, and labor efficiency: (i) political institutional quality negatively affects TFP and capital efficiency but positively influences labor efficiency; (ii) legal institutional quality positively affects TFP and capital efficiency but negatively influences labor efficiency; and (iii) economic institutional quality negatively affects TFP and capital efficiency while positively influencing labor efficiency. These results have been discussed in detail in the previous section and are therefore not elaborated here.

Based on the findings, policymakers should prioritize institutional development by continuously improving existing political, legal, and economic institutions. At the same time, attention must be paid to system-wide problems of corruption and low implementation efficiency to ensure that good institutions can be effective drivers of economic growth.

In terms of limitations, we selected representative common formal institutional variables to proxy institutional quality, but neglected informal institutional factors. Likewise, our economic growth variable included the two most common indicators, capital and labor, but excluded other potential determinants such as human capital or research and development. Future research should address these areas to provide more comprehensive, scientific, and persuasive conclusions on the relationship between institutional quality and economic growth.

REFERENCES

Acemoglu, D. & Robinson, J. A. 2012. Why nations fail: the origins of power, prosperity, and poverty. *Finance and Development-English Edition* 49(1).

Ahmed, F., Kousar, S., Pervaiz, A. & Shabbir, A. 2022. Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries. *Borsa Istanbul Review* 22(1): 189-196.

Aida, N., Palupi, W.A. & Husain, F.R. 2023. What is the role of tourism, foreign direct investment, and institutions in economic growth in ASEAN? *Wseas Transactions on Environment and Development* 19: 571 - 581.

Asghar, N., Qureshi, D.S. & Nadeem, M. 2020. Institutional quality and economic growth: Panel ARDL analysis for selected developing economies of Asia. *South Asian Studies* 30(2): 381-404.

Beckert, Jens. 1996. What is sociological about economic sociology? Uncertainty and the embeddedness of economic action. *Theory and Society* 25(6): 803-840.

Chang C.C. 2023. The impact of quality of institutions on firm performance: A global analysis. *International Review of Economics and Finance* 83: 694-716.

Chung, K.H. & Kim, D. 2021. Explaining Asian growth paradox through interaction between informal and formal institutions. *Asian Education and Development Studies* 10(4): 600-614.

Dequech, D. 2003. Cognitive and Cultural Embeddedness: Combining Institutional Economics and Economic Sociology. *Journal of Economic Issues* 37(2): 461-470.

Granovetter, M. 1985. Economic action and social structure: the problem of embeddedness. *American Journal of Sociology* 91(3): 481-510.

Granovetter, M. 1990. *The Old and the New Economic Sociology: A History and an Agenda." pp.89 -112 in Beyond the*

Marketplace: Rethinking Economy and Society, edited by Roger Friedland and A.F.Robertson. New York: Aldine de Gruyter.
He, Y., Zhu, X. & Zheng, H. 2022. The influence of environmental protection tax law on total factor productivity: Evidence from listed firms in China. *Energy Economics* 113.
Huo, C., Hameed, J., Albasher, G. & Pang, M. 2023. The impact of institutional quality, natural resources, and finance-growth on China's economic recovery: An empirical study. *Resources Policy* 83.
International Monetary Fund (IMF). 2024. *Regional Economic Outlook for Asia and Pacific*. Washington, DC: IMF.
Liu D.G. & Zhang Y.J. 2022. Research on the Impact of financial development on the efficiency of economic growth factors. *China Soft Science* 10: 83-97.
Liu, W. & Li, S.R. 2002. Industrial structure and economic growth. *China Industrial Economy* 5: 14-21.
Nayak, A.R. & Pradhan, K.C. 2024. Institutional Quality and Economic Performance: A Study of Asian Countries. *Millennial Asia*.
North, D.C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
North, D.C. & Thomas, R.P. 1973. *The Rise of The Western World: A New Economic History.* Cambridge: Cambridge University Press.
Nowak, V. & Raffaelli, P. 2022. The interconnected influences of institutional and social embeddedness on processes of social innovation: A Polanyian perspective. *Entrepreneurship & Regional Development* 34(3-4): 319-342.
Polanyi, K. 1944. *The Great Transformation: The Political and Economic Origins of Our Time*. New York: Farrar & Rinehart.
Polanyi, K. 1968. The economy as instituted process. In G. Dalton (Ed.), *Primitive, archaic, and modern economies: Essays of Karl Polanyi*. Garden City, NJ: Doubleday Anchor.
Röell, C., Arndt, F. & Kumar, V. 2024. A blessing and a curse: institutional embeddedness of longstanding MNE subsidiaries in emerging markets. *Journal of Management Studies* 61(2): 561-594.
Sahasranamam, S., Arya, B. & Mukundhan, K.V. 2022. Dual institutional embeddedness and home country CSR Engagement: Evidence from Indian MNEs. *Journal of Business Research* 141: 163-174.
Salder, J. 2023. Embeddedness, values and entrepreneur decision-making: Evidence from the creative industries. *The International Journal of Entrepreneurship and Innovation* 24(2): 131-141.
Sari, V.K. & Prasetyani, D. 2021. The impact of the institution on economic growth: An evidence from ASEAN. *Jurnal Ekonomi Pembangunan* 19 (1): 19-28.
Tran, O.K.T., Le, H.D. & Nguyen, A.H.V. 2021. Role of institutional quality in economic development: A case study of Asian countries. *Problems and Perspectives in Management* 19(2): 357-369.
Wang Q.Y. 2007. Factor efficiency and institutional effect in economic growth. *Statistics & Decision* 20: 39-41.
Wigren-Kristoferson, C., Brundin, E., Hellerstedt, K., Stevenson, A. & Aggestam, M. 2022. Rethinking embeddedness: a review and research agenda. *Entrepreneurship & Regional Development* 34(1-2): 32-56.
Zhong X.T. & Gong W.P. 2008. Institutional affects to the factors efficiency on the economy growth of Guangdong province. *South China Journal of Economics* 4: 75-81.
Zhou X. & Tao C.Q. 2019. The impact of elements spatial agglomeration and institutional quality to TFP. *Systems Engineering-Theory & Practice* 39(4): 1051-1066.
Zukin, S. & DiMaggio, P. (Eds.). 1990. *Introduction to Structures of Capital*. Cambridge: Cambridge University Press.

Xia Bing
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi, Selangor, MALAYSIA.
E-mail: home5618721@126.com

Lai Wei Sieng*
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi Selangor, MALAYSIA.
E-mail: laiws@ukm.edu.my

*Corresponding author