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EMERGING ASIAN ECONOMIES GROWTH AT THE CROSSROADS NATURAL RESOURCES AND INSTITUTIONAL QUALITY

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ABSTRACT

Asia is rising with the emergence of highly growing economies of India, China, Thailand, Vietnam, Philippines, Malaysia, and Indonesia, the global canvas. The development patterns of these economies would define the global development path in the coming years. These economies are rich in diversified natural resources that can be employed to augment their growth and development. However, natural resources cannot be operationalized for growth and development in an institutional vacuum. Effective institutions are imperative to channel natural resources for growth. The interplay of natural resources and quality institutions paves the path for economic growth along with other crucial factors i.e., labour force, trade openness, and gross fixed capital formation in emerging Asian economies. The study in hand aims to suggest policy recommendations for the international development practitioner as well as stakeholders of these countries to improve economic performance by avoiding the "Institutional Curse" to not land into the "Resource Curse" by exploring the impacts of natural resources and institutional quality's interaction of economic upswing of emerging Asian economies. This study has used Panel Quantile ARDL with PMG specification to capture the coupling effect of natural resources and institutional quality for emerging Asian countries. The results showed that emerging Asian economies can extract higher growth from natural resources by pursuing institutional quality policy. This study explored the debate of natural resources and institutional curse for an important set of countries and provided policy to achieve a higher growth trajectory.

Keywords: Resource and Institutional Curse; Quantile ARDL; Long Run Effects; Moderator Model

INTRODUCTION

The development of any economy is a complex recipe of multifaceted ingredients. Human, capital, and natural resources are considered key to economic development. The role of natural resources for growth and development is in question as Gyflason (2001) hypothesized that countries with ample natural resources move sluggishly on development trajectory compared to countries with scarce natural resources. Economies could qualify for economic upswing and development by utilizing domestically available natural resources to augment labour and capital productivity.

With the exploration of natural resources, namely fossil fuels, metals, and minerals, it was expected that

using these resources would augment the economic growth and development of these countries. However, these countries could not catch the development momentum as it was expected, and the phenomenon is generally known as the "Resource Curse." Most developing countries could not get the expected benefits of natural resource exploitation due to fragile/faulty institutions and inefficient allocation of natural resources, resulting in sluggish economic growth. The anomaly is generally referred to as an "Institutional Curse."

Many factors can drive an economy toward a resource curse via an institutional curse. Generally, these can be categorized into two groups: "The Dutch Disease" and "The Nigerian Disease". The "Dutch Disease" refers to changes in the overall production structure that are expected to occur, followed by the discovery and exploitation of a large stock of natural resources with an increase in the interaction price of an exportable natural resource/commodity that is perceived to be permanent. Whereas the "Nigerian Disease" hypothesis reveals that the natural resource revenue is washed by respective governments, lacking the institutional capacity to use these windfall gains. Consequently, corruption and rent-seeking features become prominent in these economies. Sequentially, rent-seeking behaviour tends to compete with productive sectors of the economies, evacuate their "economic vitality", and pave the way to the institutional curse, which ultimately leads the economy into the resource curse. The debate of development and institutions began with the unorthodox work of North (1991), who defined institutions as "institutions are humanly devised constraints that structure political, economic and social interactions. They consist of both informal constraints (sanctions, taboos, customs, traditions, and code of conduct) and formal rules (constitutions, laws, property rights)". To optimize the benefits of natural resources, economies must frame efficient governance mechanisms for these natural resources (Kaufmann, 2013). The system of power and responsibilities related to natural resources should be developed and implemented to effectively manage natural resource returns and create utility for the welfare of the economy and its people (Natural Resource Governance Institute, 2014). There is always an interplay between natural resources and institutional quality. The availability of rich natural resources in a country does not prove a source to spoil its institutional quality. Faulty and deficit institutional quality does not necessarily ascribe to the disposal of abundant natural resources in a country. Copious resources are not the litmus test for the institutions' quality (Mehlum et al., 2005). Abundant natural resources are ruinous for growth only when institutions are not "production friendly" and only "grabber friendly" (Mehlum et al., 2006).

Why Emerging Asian Economies? ---- Asia is rising, the developed world is battling with an economic slack, and the emerging Asian economies i.e., India, China, Thailand, Vietnam, Philippines, Malaysia, and Indonesia, are pacing ahead to grow at twice the rate of the United States in 2022. Further, it is also forecasted that the GDP of emerging Asian economies will grow more than developed economies in the coming couple of years[4].

Most of these economies are rich in diversified natural resources, e.g., forests, scarce metals, minerals, and water resources. The study in hand aims to suggest policy recommendations for the international development practitioner as well as stakeholders of these countries to improve economic performance by avoiding the "Institutional Curse" to not land into the "Resource Curse" by exploring the interaction of natural resources and institutions.

Research Question

The study addresses the following question:

Impact of the interplay of natural resources and institutions' quality in Emerging Asian countries on their economic growth?

Research Objectives

The study is designed to untangle the impact of the complex interplay of natural resources and institutions' quality in the economic growth of Emerging Asian countries by taking natural resource rents, institutional quality coupled with the labour force, gross capital formation, and trade liberalization for the period of 2000-2021. It aims to suggest evidence-based policies to the development stakeholders to circumvent the resource curse by strengthening institutional quality.

LITERATURE REVIEW

Natural Resource Intervention for Economic Growth

Gylfason (2002) explains the connotation between natural resources and economic upswing across the countries. The findings reveal that natural resource-abundant country faces various other issues, such as corruption from top to bottom and stumpy level of education and investment. Moreover, it crowded out social, foreign, human, and physical capital and hindered economic growth. The empirical results prove that honesty, education, investment, and trade significantly positively affect economic growth.

Brunnschweiler (2006) brought forth the impact of institutions, and natural resource abundance on economic upswing. The study employed OLS and 2SLS techniques on the data from 1970-2000 for around 100 countries. The results reveal that natural resources have positive effects on economic growth through subsoil wealth, and institutions are key in determining it.

Fan, Fang and Park (2012) examined the phenomenon of resource curse at different levels in China. Their analysis consists of the city level, among cities within the province, and the prefectural level in China throughout 1997-2005. They applied a functional-coefficient regression model and found positive and significant footprints of copious natural resources on economic growth. They also used various transmission channels such as openness, scale of manufacturing industry, and innovation. The study establishes no signal of a resource curse phenomenon and interestingly, a resource-rich city also has positive effects on the economic growth of a neighboring city.

Mehar, Hasan, Sheikh and Adeeb (2018) highlighted the importance of natural resource rents in raising the GDP per capita in India and Pakistan from 1970 to 2017. The study explains the positive effects of natural resource rents by applying various econometric techniques such as the ADF test (augmented Dickey-Fuller) to detect the stationarity, long-run relationship with the help of cointegration test, causation through OLS regression, and finally vector error correction model (VECM) to test the short run as well as long run connotation and error correction term (ECT) concerning natural resources rents and economic growth was applied. The study clinched that natural resources positively affect economic growth in both countries. Moreover, the results are in favour of India and insignificant in the case of Pakistan.

Hayat (2018) examined the possible linkages of copious natural resources and growth in 106 countries. They applied the fixed effect panel data technique from 1993-2012. The study found that foreign direct investment helps to increase economic growth, though, the presence of natural resource abundance slows down this association.

Haseeb, Kot, Hussain, and Kamarudin (2021) explored the role of natural resources on economic growth in Asian countries i.e. Thailand, China, India, Malaysia and Indonesia. The study period is based on 1970 to 2018. They applied quantile-on-quantile (QOQ) regression analysis on natural resources and economic growth. The study confirms the positive effects of natural resources on economic growth; the results are more pronounced on high quantiles. It is also said that economic growth is enhanced in the presence of higher natural resource rents, except in India.

Another study by Khan (2021) evaluated the impact of natural resources on growth and openness, labour, inflation rate and private investment served as explanatory variables in the model for Pakistan. The study employed an autoregressive distributed lag-bound test by using a period from 1972-2013. The study found adverse effects of natural resources on economic upswing but positive effects in the short run.

Mumuni and Mwimba (2022) came forth with evidence of the contribution of natural resource rents and green energy consumption to the economic growth of 24 African countries. Their study covers other variables such as carbon dioxide, fossil fuel energy, forest rents, mineral rents, inflation, gross fixed capital formation and trade. The data is collected from 1990 to 2020 and the dynamic panel autoregressive distributed lag model and Feasible Generalized Least Square have been applied to find the empirical pieces of evidence. The outcomes reveal that the rents from natural resources and green energy consumption both boost growth in the long run but shrink growth in the short run in selected African countries. Adverse effects of fossil fuels, forest rents and minerals have been observed on economic growth. In addition, gross fixed capital

formation (GFCF) has an affirmative but trivial impression on the growth of the economy.

Taneja, Bhatnagar, Kumar and Rupeika-Apoga (2023) studied the natural resource rents on the economic upswing of India. They used data from 1993 to 2020 and applied the Granger causality and autoregressive distributed lag (ARDL) bound test. The study found a significant impact of natural resources' rent on economic upswing in both the short and long run. Moreover, it is imperative to use natural resources wisely and reduce pollution to attain higher economic growth.

Papyrakis and Gerlagh (2003) explored the possible effects of plenty of natural resources on the economic upswing in the presence of various independent variables such as initial per capita income, share of mineral production in gross domestic product, corruption perception index, gross domestic investment, schooling, terms of trade (TOT) and openness for the period of 1975-1996. The results of the ordinary regression line (OLS) reveal the fact that natural resource abundance has adverse effects on economic growth. Nevertheless, positive impacts were found by the inclusion of further explanatory variables like corruption perception index, gross domestic investment, schooling, openness, and terms of trade on growth. The study also discussed the relative importance of various transmission channels and found that negative effects, at the same time, investment channel has been found more profound.

Natural Resources, Institutional Quality and Economic Growth

Mehlum, Moene and Torvik (2006) studied the interplay between institutional quality, and natural resource rents on economic growth for 87 countries from 1965 to 1990. The study clarified the fact that economic growth is mainly dependent on natural resources and the rate of high and low levels of income is due to the institutional quality. Since grabber-friendly institutes lead to decreased national income, in contrast, producer-friendly institutions boost economic growth. More specifically, the interaction of institutional quality and natural resources was found to be significant in the pace of economic growth.

Boschini, Pettersson and Roine (2007) investigated the significance of the nature of natural resources and institutional quality on the progress of an economy. They employed OLS and 2SLS. The study establishes an adverse affiliation between economic growth and natural resources. Moreover, natural resources become the curse in the nonexistence of sturdy institutions. However, the situation can be changed with the help of well-established institutions and the curse comes into blessings of a nation.

Peluso and Lund (2011) highlighted the role of institutional quality on economic growth for 181 countries for the period of 1950-2009. They applied a fixed effect and pooled regression model to scrutinize the impact of institutional quality on various stages of growth in the presence of education. The estimates confirm that good-quality institutions positively and significantly affect economic growth. Various issues also appeared with these natural resources like disputes and rent-seeking activities due to the financial and technical limits, at the same time. However, effective institutions can overcome these problems.

Ji, Magnus and Wang (2013) studied the affiliation among abundant resources, institutional quality and economic growth for the provinces of China for the period 1990-2008. Other variables are resource reserves, research and development (R&D), industrialization, employment in the private sector, foreign direct investment (FDI) and initial economic level per capita. The regression results showed that natural resources with confidence in courts have a positive footprint on China's growth.

Epo and Faha (2019) examined the connection between institutional quality, natural resources and economic upswing in 44 countries. They collected data for the period of 1996-2016 and applied a panel smooth transition regression model. The study also considers other control variables such as population growth, inflation, investment and trade openness for a detailed analysis. Estimates revealed that all indices of institutional quality and resource rents have no association with economic growth, in contrast, the relationship is found to be significant and positive with economic growth by taking into account only two indices of institutional quality.

Huo, Hameed, Albasher and Pang (2023) studied the linkages between institutional quality, natural resources, financial development and economic growth of China for the period 1977-2021. The study employed Johansen Cointegration and VEC (vector error correction) methodology to find long-run and

short-run relationships. The empirical estimates reveal the fact that the quality of natural resources and institutional quality have positive effects on economic growth, at the same time, financial development and gross fixed capital formation do not play any role in the economic growth of China. However, the role of strong institutions moderates the effects of natural resource rents on financial development.

METHODS

Variables and Data Sources

The study in hand is designed to investigate the short and long-run effects of natural resource rents, institutional quality coupled with the labour force, gross fixed capital formation (GFCF), and trade liberalization on economic growth for newly emerging Asian countries, comprising China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam. The panel data is taken from The World Development Indicators (WDI) and is spanning from 2000 to 2021. Table 1 illustrates the selected variables, their respective measurement unit, and data sources.

Table 1

Variables of Interest

Symbol	Description	Unit of measurement	Source
GDP	Economic growth	Per capita GDP (constant 2015 US$)	WDI
WGI	Institutional quality	World governance indicators	WDI
TNRR	Total natural resource rent	Total natural resource rent as a percentage of GDP	WDI
LF	Labor force	Total labor force in millions	WDI
GCF	Gross capital formation	Gross capital formation as a percentage of GDP	WDI
OP	Trade liberalization	Total trade as a percentage of GDP	WDI
TNRR*WGI	Interaction term	Total natural resource rent* Institutional quality	WDI

Equation 1 is the estimation equation performed using Pooled Mean Group (PMG) Specification (Blackburne & Frank, 2007) in the Quantile Regression method. Chu et al. (2015) used the ECM equation in quantile regression to form a Quantile ARDL model, but it did not follow any of the specifications proposed by (Blackburne & Frank, 2007) to estimate ARDL in panel data. This study has used the Pooled Mean Group (PMG) specification in which the long run is homogenous and the short run is cross-sectional heterogeneous to account for unobserved heterogeneity. Previous studies (Arshed et al., 2022; Fahmida et al., 2022; Iqbal et al., 2023; and Zahid et al., 2022) have used this method to estimate Panel Quantile ARDL in Dynamic Fixed Effect specification, but that specification only allows the overall intercept of the ECM equation to vary across cross sections. The advantage of this model is that it can address non-normal variables and provides estimates at different quantile positions of the dependent variable. Thus, this approach helps to generate estimates of different samples based on the size of the dependent variable.

$$\Delta\xi GDP_{it}(\tau_k) = \alpha_0 + \sum_{j=1}^{k}\alpha_{1jt}\,\Delta WGI_{it-j}(\tau_k) + \sum_{j=1}^{k}\alpha_{2jt}\,\Delta TNRR_{it-j}(\tau_k) + \sum_{j=1}^{k}\alpha_{3jt}\,\Delta TNRR^2{}_{it-j}(\tau_k) + \sum_{j=1}^{k}\alpha_{4jt}\,\Delta\xi ILF_{it-j}(\tau_k) + \sum_{j=1}^{k}\alpha_{5jt}\,\Delta GCF_{it-j}(\tau_k) + \sum_{j=1}^{k}\alpha_{6jt}\,\Delta OP_{it-j}(\tau_k) + \sum_{j=1}^{k}\alpha_{7jt}\,(WGI*TNRR)_{it-j}(\tau_k) + \beta_1\xi GDP_{it-1}(\tau_k) + \beta_2 WGI_{it-1}(\tau_k) + \beta_3 TNRR_{it-1}(\tau_k) + \beta_4 TNRR^2{}_{it-1}(\tau_k) + \beta_5\xi ILF_{it-1}(\tau_k) + \beta_6 GCF_{it-1}(\tau_k) + \beta_7 OP_{it-1}(\tau_k) + \beta_8(WGI*TNRR)_{it-1}(\tau_k) + \varepsilon_{it}(\tau_k) --(1)$$

Where, i, t, k and τ indicate cross sections, time period, no of quantile and tau, respectively

RESULTS AND DISCUSSIONS

To perform Pooled Mean Group Quantile Regression (PMGQR), primary information, such as the nature of data, correlation, stationarity, and cointegration between the variables is required. The descriptive statistics are reported in Table 2, in which, the average value of all the variables is positive except institutional quality leads to a positive role in economic growth. The normality test- Jarque-Bera is applied and acceptance of the alternative hypothesis

confirms that the data is not normal. Moreover, it contains outliers, providing enough evidence to apply quantile regression (Haseeb et al., 2021; Sharif et al., 2019; Troster et al., 2018).

Table 2
Descriptive Statistics

	ξGDP	WGI	TNRR	GCF	ξLF	OP
Mean	27.11190	-0.269990	4.767597	29.72595	18.28169	91.07862
Median	26.65574	-0.327540	3.372143	29.75890	17.74380	69.31752
Maximum	30.39115	0.464543	14.18748	46.66012	20.47571	220.4068
Minimum	25.26150	-0.949508	0.404066	15.68436	16.05111	25.99325
Std. Dev.	1.287182	0.315246	3.600267	7.755088	1.366570	49.64149
Jarque-Bera	25.19545	16.64006	19.07737	7.073032	11.23160	13.20972
Probability	0.000003	0.000244	0.000072	0.029115	0.003640	0.001354
Observations	154	154	154	154	154	154

Table 3
Correlation Matrix

Variable	ξGDP	WGI	TNRR	GCF	ξLF	OP
ξGDP	1					
WGI	-0.22215*** (0.0056)	1				
TNRR	-0.32484*** (0.0000)	0.132508 (0.1014)	1			
GCF	0.734809*** (0.0000)	-0.32113*** (0.0000)	0.028789 (0.7230)	1		
ξLF	0.892541*** (0.0000)	-0.48065*** (0.0000)	-0.32893*** (0.0000)	0.767063*** (0.0000)	1	
OP	-0.66582*** (0.0000)	0.467539*** (0.0000)	0.498022*** (0.0000)	-0.37535*** (0.0000)	-0.788*** (0.0000)	1

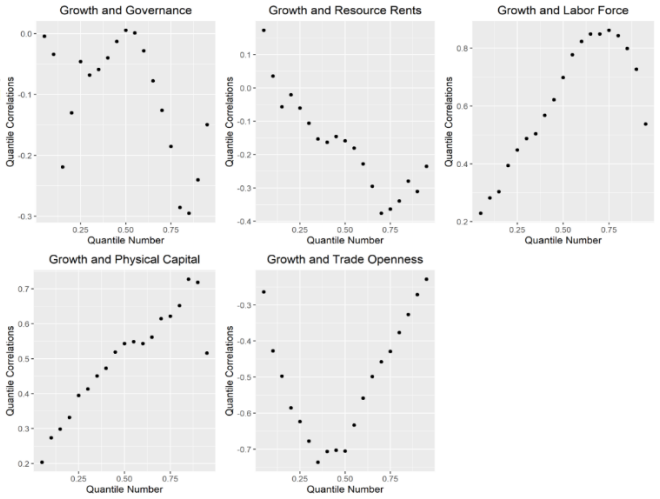
*indicates that the variable is significant at 1% level of significance. ξ symbolizes that the variable is in natural logarithm

To check the links between all the explanatory and dependent variables, a correlation matrix is illustrated in following table 3. The first column shows the correlation between economic growth and institutional quality, natural resource rents, gross capital formation, labour force and trade liberalization. According to the results, economic growth is negatively and significantly correlated with institutional quality, natural resource rents and trade liberalization, contrarily, a positive and significant correlation is found between gross capital formation, labour force, and economic growth.

Figure 1 shows the correlation between economic growth and institutional quality, natural resource rents, labour force, gross capital formation and trade openness at 25th, 50th and 75th quantiles. The correlation between economic growth and institutional quality shown in panel 1 is negatively correlated from the 1st to 25th quantile, while a positive correlation exists between the 25th to 50th quantile. Moreover, again, a negative correlation emerges after the 50th quantile. Panel 2 exhibits the negative correlation between economic growth and rents from natural resources from the 25th to 75th quantiles. The positive correlation between growth and labour force and gross capital formation from the 25th to the 75th quantile can be seen in panels 3 and 4, respectively. In the last panel, firstly trade openness is negatively correlated with growth but after that, a positive correlation has emerged from the 50th to 75th quantile.

Since the correlations vary because of growth size, this also indicates the possible change in marginal effects. This merits the use of quantile-based regression, providing user-provided quantile growth positions.

Figure 1
Quantile Correlation



The stationarity characteristics can be checked through Levin Lin and Chu (LLC) unit root (Levin et al., 2002) on all the variables before the application of PMGQR. The findings of the LLC unit root test are reported in Table 3.

Table 3

Levin Lin & Chu (LLC) unit root test

Variable	Levin Lin & Chu (LLC)			
	At Level		At First Difference	
	Unadjusted t	Adjusted t*	Unadjusted t	Adjusted t*
ξGDP	-4.54430	-4.456***	-4.6809	1.3268
WGI	-3.8720	-1.3620 *	-8.8499	-5.311***
TNRR	-2.9476	0.6002	-11.8097	-7.255***
ξLF	-3.4303	-2.885***	-4.8145	0.8842
GCF	-4.8730	-1.5163*	-8.2063	-3.427***
OP	-3.8498	-1.4946*	-9.3161	-4.2474***

*,**,***indicates significant at 10%, 5% and 1% significant level

The findings show the mixed order of integration. The institutional quality (WGI), gross capital formation (GCF) and trade liberalization (OP) were found stationary at a level and first difference both. Contrarily, GDP per capita and LF are stationary at the level and TNRR stationary at the first difference. Hence, mixed order shows that pool means group can be applied to the selected variables.

Table 4

Cointegration Test

Pedroni Cointegration Test			Kao Cointegration Test		
	Statistics	P-value		Statistics	P-value
Modified Variance ratio	-3.585***	0.0002	Modified Dickey-Fuller t	2.394***	0.0083
Modified Phillips-Perron t	1.648**	0.0497	Dickey-Fuller t	3.391***	0.0003
Phillips-Perron t	-2.332***	0.0099	Unadjusted modified Dickey-Fuller t	2.669***	0.0038
Augmented Dickey-Fuller t	-3.567***	0.0002	Augmented Dickey-Fuller t	2.297***	0.0108
			Unadjusted Dickey-Fuller t	4.267***	0.0000

** and *** indicate significant at 5% and 1% significance level, respectively

The long-run relationship between the variables was checked with the help of Pedroni and Kao Cointegration tests. The results reported in Table 4 confirmed the long-run relationship between the said variables in all the selected countries. Thus, the present study moves to an evaluation of quantile autoregressive regression.

The PMG growth quantiles are applied after endorsing the stationarity features and long-run cointegration. The outcomes of the analysis are displayed in Table 5. It can be noticed that TNRR, $TNRR^{2,}$ and WGI are associated positively but statistically insignificant with GDP per capita in the long run, except at the 75 percentile, where WGI is significant. While LF and OP have significant and positive impacts on GDP per capita.

The coefficient of the LF indicates a significant and positive impact on GDP per capita. The outcome of LF reveals that a 1% increase in LF increases 15% at 25^{th} (lower), 50^{th} (median), and 75^{th} (high) levels of confidence, respectively. The results are in line with Khan (2021). An increase in the labour force has positive effects if a large part of the labour force is engaged in research and development (R&D) activities and consequently fosters economic growth in selected countries.

The estimated coefficient of GCF is found to be adverse and significantly associated with economic growth. A 1% increase in GCF decreases 7%, 4%, and 4% at 25^{th} (lower), 50^{th} (median), and 75^{th} (high) levels of confidence, respectively. It provides various reasons for a negative relationship between GCF and GDP per capita, such as debt burden, overemphasis on physical capital or neglecting the importance of human capital, dependency on international resources, overinvestment, overcapacity, misallocation of resources, speculative bubbles, and environmental degradation.

Table 5

Long-run Estimates

Dependent Variable: ξGDP									
Variables	Coef. 25 Perc.	LL	UL	Coef. 50 Perc.	LL	UL	Coef. 75 Perc.	LL	UL
WGI	0.05738	-0.71	0.67	0.49459	-0.39	1.83	1.1216*	-0.45	1.61
TNRR	0.03612	-0.02	0.18	0.05142	-0.04	0.18	0.01414	-0.07	0.06
TNRR2	0.00060	-0.01	0.00	-0.00051	-0.01	0.01	-0.00057	-0.00	0.01
ξ LF	1.522***	1.49	1.54	1.534***	1.48	1.58	1.555***	1.52	1.59
GCF	-0.07***	-0.09	-0.06	-0.04***	-0.07	-0.02	-0.04***	-0.04	-0.02
OP	0.011***	0.01	0.01	0.006***	0.00	0.01	0.006***	0.00	0.01
WGI * TNRR	0.08760	0.03	0.14	0.1501**	-0.01	0.28	0.10451*	0.03	0.25

*,**,***Depicts significant coefficients at 10%,5% and 1%, ξ denotes variable in natural logarithm.

Trade openness plays an important role in achieving sustainable economic growth. The results of the present study also endorse this notation as the coefficient of trade liberalization OP is positively and significantly related to the GDP. The coefficient of OP can be interpreted as a 1% increase in OP increases 1%, 0.05%, and 5% at the 25^{th}, $50^{th,}$ and 75^{th} levels of confidence, respectively. Reducing trade restrictions boosts economic growth since trade liberalization increases access to markets, technological progressions, new and improved production methods, comparative and specialization gains, economies of scale, innovative technology, foreign direct investment, government revenues, and overall economic efficiency. The positive relationship between trade liberalization and higher economic growth can be witnessed in East Asian countries such as Taiwan, China, and South Korea.

WGI, TNRR and TNRR^2 have a positive impact but are insignificantly associated with GDP, at the same time, the interaction of WGI and TNRR also significantly positive impact on economic growth. The coefficient of interaction term WGI*TNRR is found to be positive and statistically significant associated with economic growth. According to the estimates, a 1% increase in WGI*TNRR increases 8%, 15% and 10% at 25th, 50th and 75th levels of confidence, respectively. The positive interaction of WGI and TNRR leads to economic development since well-functioning institutions are the instruments to manage their natural resource wealth. The results are similar to the study of Mehlum, Moene and Torvik (2006) and Huo, Hameed, Albasher and Pang (2023), that the interaction of strong institutions and abundance of natural resources has affirmative effects on the economic growth of an economy. Moreover, the significance of subsoil wealth in the presence of effective institutions raises economic growth (Brunnschweiler, 2006). Therefore, a country must define property rights, and ensure accountability and revenue transparency to get resource rent and high sustainable economic growth. The natural resource rent directly contributes to economic growth (Haseeb et al., 2021) by stimulating related industries, job creation, and generation of government income. Hence, the existence of a positive interaction of natural resource rent and institutional quality is crucial in defining the economic growth of a country. Strong institutions can lessen the jeopardies linked with resource dependency and ensure that natural resource rents contribute absolutely to economic growth.

Table 6

Short-run Average Estimates

Dependent Variable: ξGDP									
Variables	Coef. 25 Perc.	LL	UL	Coef. 50 Perc.	LL	UL	Coef. 75 Perc.	LL	UL
Intercept	0.036***	0.02	0.05	0.057***	0.04	0.06	0.065***	0.05	0.07
ΔWGI	-0.0507	-0.10	0.07	-0.0037	-0.03	0.05	0.0057	-0.06	0.08
ΔTNRR	-0.0036	-0.01	0.02	-0.0016	-0.01	0.01	0.0011	-0.01	0.01
ΔTNRR^2	0.0004	-0.00	0.00	0.0002	-0.00	0.00	0.0001	-0.00	0.00
Δξ LF	0.2902	-0.01	0.54	-0.0366	-0.27	0.48	-0.1731	-0.52	0.05
ΔGCF	0.0042*	0.00	0.01	0.0021	0.00	0.00	0.0017	0.00	0.00
ΔOP	0.0005	-0.00	0.00	0.0003	-0.00	0.00	0.0001	-0.00	0.00
ΔWGI * TNRR	0.0069	-0.00	0.02	0.0016	-0.00	0.01	0.0045	-0.00	0.01
ECM	0.0035	-0.02	0.01	-0.0098*	-0.01	-0.00	-0.01***	-0.02	-0.00

*,**,*** Depicts significant coefficients at 10%,5% and 1%, ξ denotes variable in natural logarithm.

The short-run average assessments are illustrated in Table 6, according to the outcome all the variables of interest are statistically insignificant. At the same time, the error correction term is found significant at the 50th and 75th quantile levels of confidence. The negative sign of ECM indicates that the model is convergent towards its long-run equilibrium in one year at the 50th and 75th quantile level of confidence, contrarily at the 25th quantile level of confidence, it displays insignificant.

Appendix (Table A1) shows the results of short-run average estimates it reveals that the model is convergent for China at the 25th and 75th quantile level of confidence, and it takes three and one year to converge towards its long-run equilibrium, respectively. The model is convergent for Thailand at the 25th and 50th quantile level of confidence, and it takes one and three years to converge towards its long-run equilibrium, respectively (Table A6). Table A7 indicates that the selected model is convergent for Vietnam at the 25th quantile level of confidence, and it takes six years to converge towards its long-run equilibrium. Moreover, the outcomes indicate that the models are insignificant for the economies of India (Table A2), Indonesia (Table A3), Malaysia (Table A4), Philippines (Table A5)

The marginal effects of WGI, TNRR, TNRR^2, ILF, GCF, OP and WGI*TNRR on GDP can be seen in the following Figure 2. All the panels show positive marginal effects on economic growth, indicating that these variables can contribute to fostering economic growth in emerging Asian economies. Further, the moderator effect shown in Figure 3, shows that the median policy of improving institutions will enable positive effects from resources to growth.

Figure 2

Marginal effect on GDP

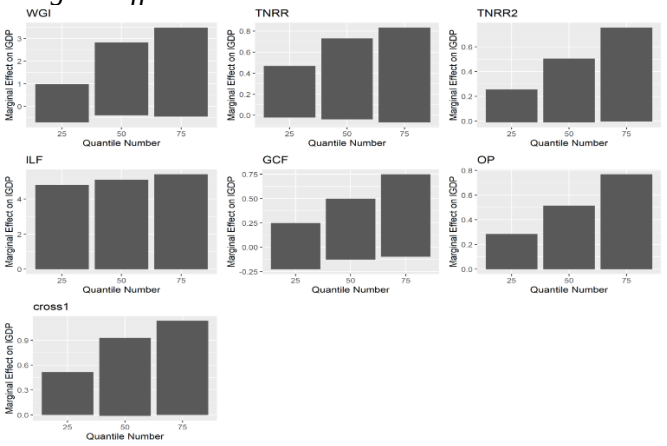
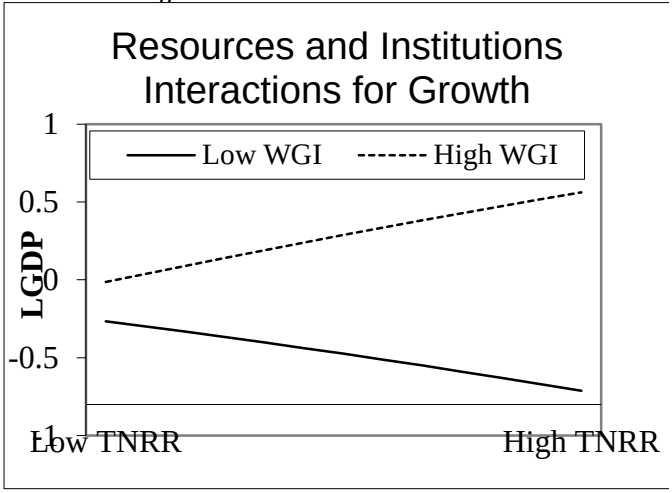


Figure 3
Interaction Effect on Medians



CONCLUSION AND POLICY IMPLICATIONS

The present study evaluates the impact of institutional quality, natural resource rents, labour force, gross capital formation, and trade liberalization on economic growth for emerging Asian countries, i.e., China, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam. The development pattern of these emerging Asian economies will define the global development path in years to come. For the analysis purpose, secondary data from 2000 to 2021 have been used. The response variable is economic growth, and explanatory variables are institutional quality, natural resource rents, labour force, gross capital formation, and trade liberalization. Some preliminary tests such as the Jarque-Bera test for normality, correlation matrix, quantile correlation, Levine, Lin, and Chu unit root test, Pedroni and Kao cointegration tests have been employed to check the long-run relationship between the network of variables. Lastly, the Pooled Mean Group Quantile Regression (PMGQR) technique has been employed that allows efficacy, variability, and more degree of freedom but not so much as collinearity. The PMGQR imposes restrictions in the long run by granting short-run coefficients and error variances can vary across groups. The results of the analysis reveal that labour force, gross capital formation, trade openness and interaction of institutional quality and natural resource rents play a significant role in the pace of economic growth from the 25th to 75th quantile.

Based on empirical results, it can be deduced that natural resources cannot be operationalized for growth and development in an institutional vacuum. Effective institutions are imperative to maximize the economic benefits of natural resources. Therefore, the policies related to property rights, the rule of law, accountability, and effectiveness of government must be devised and implemented for natural resources to augment economic growth. There is also a need for well-targeted capital formation to enhance labor productivity, compatible with the economy's needs. Therefore, regulatory frameworks, appropriate policy measures, and investment strategies are imperative for economic growth in these selected countries. Further, policymakers should also focus on implementing safety nets and supporting effective industries to gain wide benefits of trade openness.

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APPENDIX

Table A1

Short-run Estimates: China

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.1156	-	0.13	0.08	0.06	0.10	0.0907	0.07	-
ΔWGI	-0.2177	-0.40	1.74	-0.18	-0.46	0.90	-0.1880	-2.29	0.50
ΔTNRR	0.1013	-0.23	0.17	0.0743	-0.13	0.20	0.0547	-0.11	0.13
ΔTNRR²	-0.0021	-0.00	0.00	-0.0013	-0.00	0.00	-0.0020	-0.00	0.02
Δξ lLF	0.7618	-	3.65	0.5375	-	-	-0.2355	-6.75	-
ΔGCF	-0.0102	-0.02	0.01	-0.0056	-0.01	0.02	-0.0026	-0.01	0.04
ΔOP	-0.0025	-0.01	-	-0.0014	-0.01	0.00	-0.0008	-	0.01
ΔWGI*TNRR	0.1369	-0.40	0.24	0.1086	-0.26	0.32	0.0466	-0.21	0.24
ECM	-0.032*	-0.06	-0.01	-0.0408	-0.06	0.02	-0.0198*	-0.07	-0.00

*Depicts significant variables, ξ denotes variable in natural logarithm

Table A2

Short-run Estimates for India

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.0569	-	0.06	0.0563	0.01	0.09	0.0673	-0.15	0.22
ΔWGI	0.2900	-3.74	0.39	0.2385	-0.75	0.42	0.4169	-1.97	0.70

ΔTNRR	-0.0474	-0.06	-	-0.0259	-0.07	0.04	0.0079	-	0.13
ΔTNRR²	0.0028	-	0.03	0.0015	-0.01	0.00	-0.0027	-0.01	-
Δξ lLF	-0.1661	-	3.70	0.2292	-0.54	1.66	-0.4975	-0.59	-
ΔGCF	0.0077	-0.28	0.05	0.0053	-0.00	0.01	0.0028	-0.00	0.03
ΔOP	0.0001	-0.00	0.03	0.0002	-0.01	0.00	0.0009	-0.01	0.00
ΔWGI*TNRR	-0.0562	-0.07	1.27	-0.0196	-0.16	0.08	-0.0619	-0.27	0.23
ECM	-0.0006	-0.04	-	-0.0008	-0.04	0.01	-0.0064	-0.16	0.06

*Depicts significant between the specified intervals, **ξ** denotes variable in natural logarithm

Table A3

Short-run Estimates for Indonesia

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.0422	-	0.06	0.0456	0.03	0.05	0.0539	0.04	-
ΔWGI	-0.0278	-1.19	0.07	-0.0664	-0.72	0.00	0.0099	-0.19	0.49
ΔTNRR	-0.0032	-0.70	0.05	-0.0029	-0.01	0.00	-0.0043	-0.02	0.02
ΔTNRR²	0.0004	-0.00	0.00	0.0005	-0.00	0.00	0.0002	-0.00	0.00
Δξ lLF	0.4168	-1.13	2.31	0.2359	0.08	0.82	0.2178	-0.01	1.12
ΔGCF	0.0003	-0.03	-	0.0019	0.00	0.00	0.0005	-0.00	0.01
ΔOP	0.0001	-0.00	0.01	0.0001	-0.00	0.00	0.0005	0.00	0.01
ΔWGI*TNRR	0.0089	-0.01	0.33	0.0093	-0.00	0.03	-0.0040	-0.03	0.02
ECM	-0.0019	-0.04	-	0.0313	-0.00	0.16	0.0212	-0.01	0.07

*Depicts significant between the specified intervals, **ξ** denotes variable in natural logarithm

Table A4

Short-run Estimates for Malaysia

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.0303	-0.03	-	0.0579	-0.23	0.07	0.0585	-0.76	0.12
ΔWGI	0.0065	-1.27	-	0.0065	-0.21	0.51	0.0913	-	0.52
ΔTNRR	0.0340	-0.85	0.19	0.0121	-0.03	0.04	0.0108	-0.05	0.05
ΔTNRR²	-0.0011	-0.00	0.02	-0.0005	-0.00	0.00	-0.0004	-0.00	0.00
Δξ lLF	0.5915	-	1.98	-0.1006	-0.48	10.45	-0.1214	-0.43	-
ΔGCF	0.0067	-0.05	0.02	0.0043	-0.00	0.03	0.0022	0.00	0.14
ΔOP	0.0011	-	0.00	0.0004	-0.00	0.00	0.0002	-0.00	-
ΔWGI * TNRR	-0.0009	-	0.11	-0.0024	-0.05	0.07	-0.0050	-0.05	-
ECM	-0.0105	-0.05	0.02	-0.0085	-0.04	0.00	-0.0116	-0.03	0.07

*Depicts significant between the specified intervals, **ξ** denotes variable in natural logarithm

Table A5

Short-run Estimates for Philippines

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.0534	-0.16	0.09	0.0513	0.01	0.0779	0.0633	0.03	-
ΔWGI	0.0095	-0.13	1.03	0.1892	-0.06	0.8500	0.0596	-0.03	0.53
ΔTNRR	-0.0447	-0.57	-	-0.0115	-0.24	1.0972	0.0064	-	0.05
ΔTNRR²	0.0155	-0.12	0.06	-0.0057	-0.03	0.0128	-0.0051	-0.03	0.02
Δξ lLF	0.1345	-1.15	1.81	0.1214	-0.80	1.7530	-0.0772	-2.10	1.93
ΔGCF	0.0056	-0.01	0.03	0.0076	-0.00	0.0147	0.0047	-0.00	0.02
ΔOP	0.0057	-0.02	0.01	0.0025	-0.00	0.0086	-0.0007	-0.00	0.00
ΔWGI*TNRR	0.0715	-0.61	0.39	-0.1050	-0.30	0.0628	-0.0288	-0.50	-0.00
ECM	-0.0305	-0.17	0.09	-0.0343	-0.21	0.0560	0.0028	-0.22	0.18

*Depicts significant between the specified intervals, ξ denotes variable in natural logarithm

Table A6

Short-run Estimates for Thailand

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.0779	-0.04	0.09	0.0474	0.02	0.11	0.0377	0.02	-
ΔWGI	0.2291	-0.29	-	0.1399	-0.47	1.77	-0.3809	-2.28	1.24
ΔTNRR	0.1262	-0.39	0.22	0.0295	-0.15	0.23	0.0482	-0.19	2.37
ΔTNRR²	-0.0306	-0.05	0.00	-0.0102	-0.07	0.02	-0.0090	-0.10	0.10
Δξ lLF	-0.4940	-2.24	2.28	0.1131	-2.97	0.64	0.8497	-2.62	1.488
ΔGCF	-0.0023	-0.01	0.01	0.0049	-0.02	0.03	0.0107	-0.02	0.02
ΔOP	0.0020	-0.00	0.01	-0.0018	-0.01	0.00	-0.0033	-0.01	0.01
ΔWGI*TNRR	-0.1109	-	0.13	-0.0749	-0.64	0.18	0.0618	-0.35	-
ECM	-0.1173*	-0.22	0.09	-0.0675*	-0.32	0.01	0.0269	-0.51	0.17

*depicts significant between the specified intervals, ξ denotes variable in natural logarithm

Table A7

Short-run Estimates for Vietnam

Dependent Variable: ξGDP									
Variables	**Coef. 25 Perc.**	**LL**	**UL**	**Coef. 50 Perc.**	**LL**	**UL**	**Coef. 75 Perc.**	**LL**	**UL**
Intercept	0.0490	-	0.06	0.0495	-0.02	0.09	0.0510	0.00	0.07

ΔWGI	0.2488	-0.34	0.63	0.1094	-0.50	1.27	0.1888	-0.12	2.20
ΔTNRR	0.0294	-0.01	0.04	0.0101	-0.01	0.05	0.0048	-0.00	0.05
$\Delta TNRR^2$	-0.0017	-0.00	0.00	-0.0005	-0.00	0.00	-0.0004	-0.00	0.00
$\Delta\xi$ LF	0.7100	0.12	1.11	0.4715	-1.36	3.50	0.3244	-1.95	2.02
ΔGCF	-0.0042	-0.02	0.00	0.0000	-0.01	0.00	-0.0001	-0.01	0.01
ΔOP	0.0000	-0.00	0.00	0.0001	-0.00	0.00	0.0002	-0.00	0.00
ΔWGI * TNRR	-0.0190	-0.05	0.03	-0.0027	-0.08	0.05	-0.0096	-0.15	0.02
ECM	-0.067*	-0.17	-0.01	-0.0316	-0.17	-0.02	-0.0297	-0.12	-0.01

*depicts significant between the specified intervals, ξ denotes variable in natural logarithm