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Effect of Institutional Quality and Financial Development on Environmental Degradation: Panel Data Analysis in the Context of 10 Asian Countries

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ABSTRACT

The study examines the impact of institutional quality and financial development on environmental degradation in ten Asian nations from 2001-to-2021. Factors like GDP, industrialization, urbanization, and financial growth were analyzed using various econometric methodologies. The fixed effect method showed that GDP, FD, INST, and IND positively affect CO2 emissions in the selected Asian countries. However, only POP had a negative effect. The study suggests that policymakers should incorporate environmental considerations into economic policies, implement environmental taxes and subsidies, promote sustainable consumption and production, and incentivize environmentally responsible practices.

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Introduction

The link between economic development, environmental sustainability, as well as institutional quality is gaining attention in environmental economics, especially in Asian countries (Ahmad et al., 2022a; Hunjra et al., 2020). As these countries strive for economic growth and prosperity, the impact of their development strategies on the environment is a critical concern. Institutional quality and financial development are identified as key elements in this context.

Institutional quality refers to a country's political, legal, and regulatory frameworks' effectiveness, transparency, and accountability (Khan & Rana, 2021; Sah, 2021). Strong institutions are important in shaping environmental policies, enforcing regulations, and incentivizing sustainable practices (Ali et al., 2019). Weak institutions can lead to resource exploitation, lax enforcement of laws, and prioritizing short-term economic improvements over long-term environmental sustainability, highlighting importance of strong institutions in a country's governance (Runar et al., 2017; Wawrzyniak & Doryń, 2020).Financial development refers to a country's financial system's depth, breadth, and efficiency (Ahmad et al., 2020; Ibrahim & Law, 2016). It can lead to investments in clean technologies, renewable energy, and environmental protection measures (Ahmed et al., 2020). However, it can also fuel unsustainable consumption patterns and resource-intensive industries, causing increased environmental degradation. The expansion of financial markets and credit availability can have both positive as well as negative

impacts on the environment (Ahmad et al., 2022b; Hussain & Dogan, 2021).

The association between institutional quality as well as financial development in Asian countries is complex as well as nuanced (Hunjra et al., 2020; Ntow-Gyamfi et al., 2020). Strong institutions can create regulatory frameworks and incentives for sustainable development, while weak institutions may exacerbate environmental problems (Ibrahim & Law, 2016; Karki et al., 2005). Understanding this dynamic is crucial for policymakers and stakeholders to address environmental challenges and promote sustainable economic progress in the region of Asian economies.

The current research examines the effect of institutional quality and financial development on environmental degradation in Asian countries. It objects is to understand intricate relationship among these factors as well as environmental outcomes, providing insights for policy decisions as well as strategies to promote sustainable development and mitigate environmental degradation in the region.

Literature Reviews

The literature provides significant understanding into the complex mechanisms determining environmental outcomes and their effect on environmental sustainability, particularly in Asian republics. It does this by examining the link between institutional quality, financial development, as well as environmental deterioration.

Institutional Quality and Environmental Degradation

Studies by (Hunjra et al., 2020; and Khan & Rana, 2021) highlight the significance of the institutional quality in influencing environmental degradation. Strong institutions, linked to effective governance, transparency, and accountability, enforce environmental regulations and promote sustainable practices. On the other side, weak institutions can lead to resource exploitation and lax enforcement of environmental laws, contributing to environmental degradation (Sah, 2021; Ali et al., 2019).

Financial Development and Environmental Degradation

The literature survey by Runar et al. (2017) highlights the multifaceted link between financial development and environmental degradation. Financial systems are important in allocating resources and influencing economic activities. While financial development can facilitate clean technologies and environmental protection, according to the studies of the (Wawrzyniak & Doryń, 2020; Ahmad et al. 2020) unchecked development can lead to increased environmental degradation through unsustainable consumption patterns.

Relationship between Institutional Quality and Financial Development

A study by Ibrahim & Law (2016) and Ahmed et al. (2020) explores the relationship between institutional quality and financial development in shaping environmental outcomes. They emphasize the importance of strong institutions for creating regulatory frameworks for sustainable development. Overall, the literature reviewed provides a comprehensive understanding of how institutional quality and financial development influence environmental degradation in Asian countries. These studies highlight the importance of strong institutions, sustainable financial practices, and effective policy interventions in promoting environmental sustainability and mitigating the adverse impacts of economic development on the environment.

Methodology

This article consists of panel data from World Bank's governance indicator covering 10 polluted countries between 2001 and 2021. Institutional quality components are from the World Bank governance index, while other variables come from the World Development index. The study lasted 21 years from 2001 to 2021. Econometric model of the study is as

$CO2it = \beta 0 + \beta 1\ FD\ it + \beta 2\ INST\ it + \beta 3\ GDP\ it + \beta 4\ IND\ it + \beta 5\ POPit + \varepsilon it$

Co2 = Co2 Omission

FD = Financial Development

INST = Institutional Quality

GDP = Gross Domestic Product

IND = Industrialization

POP = Population

ε = Error term

Results and Discussion

This section presents the study's findings and analysis, focusing on econometric tests conducted on data from several Asian nations.

	CO2	GDP	FD	INST	IND	POP
Mean	4.3332	4.8420	72.0894	-0.3132	34.7479	1.2594
Median	3.5235	5.0783	51.8749	-0.3544	34.7387	1.2984
Maximum	12.8785	14.2309	182.8681	0.9977	49.6373	3.0921
Minimum	0.6268	-9.5183	-0.1379	-1.2693	17.5485	-0.1764
Std. Dev.	3.3207	3.3760	47.0235	0.5404	8.3417	0.6129
Skewness	0.7511	-1.0213	0.4923	0.4894	-0.2196	0.2345
Kurtosis	2.5872	5.6062	1.8551	2.6401	2.2468	2.6379
Jarque-Bera	22.2478	100.5098	20.9015	9.9702	6.9692	3.2176
Probability	0.0000	0.0000	0.0000	0.0068	0.0307	0.2001
Sum	953.3096	1065.2490	15859.6700	-68.8932	7644.5290	277.0617
Sum Sq. Dev.	2414.9620	2496.0320	484255.3000	63.9647	15238.9100	82.2666
Observations	220	220	220	220	220	220

Table 1 displays the statistical data for various variables. The mean values of CO2, GDP, FD, INST, IND, and POP are 4.3332, 4.8420, 72.0894, -0.3132, 34.7479, and 1.2594 respectively. The maximum values of CO2, FD, INST, IND, and POP are 12.8785, 14.2309, 182.868, 0.9977, 49.6373, and 3.092, respectively. The minimum values are 0.6268, -9.5183, -0.1379, -1.2693, 17.5485 and -0.1764 for GDP, FD, INST, IND, and POP, respectively. The data provides a comprehensive overview of the variables and their corresponding values.

Correlation Matrix

	CO2	GDP	FD	INST	IND	POP
CO2	1.000000					
GDP	-0.09953	1.000000				
FD	0.702132	-0.00364	1.000000			
OMST	0.583047	-0.03121	0.574412	1.000000		
IMD	0.352076	0.167981	0.397885	0.126524	1.000000	
POP	-0.47775	-0.03424	-0.60187	-0.32919	-0.26497	1.000000

There is no value larger than 0.9 in this table so there is no multicollinearity among the variables. GLO and INST are highly correlated but their correlate does not exceed the rule of thumb. To check out the multicollinearity used the correlation matrix.

Variance Inflation Factors

Variables	VIF
GDP	1.053504
FD	2.805005
INST	3.081990
IND	1.841526
POP	1.795157

VIF is also applied to check the multicollinearity, and the rule of thumb is that no value of VIF should be greater than 10. All values are less than 10.

Autocorrelation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	3.43013	Prob. F (2,208)	0.0842
Obs*R-squared	6.99243	Prob. Chi-Square (2)	0.0603

Table reports the result for autocorrelation. If the probability value is less than 5% then there is autocorrelation in the data. The result shows that F-statistic is 3.43013. The P-value of the LM Test is 0.0842, which is greater than 0.05. That show autocorrelation not exist in data.

Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	4.944782	Prob. F (8,210)	0.0
Obs*R-squared	34.71437	Prob. Chi-Square (8)	0.0
Scaled explained SS	367.9828	Prob. Chi-Square (8)	0.0

There is heteroskedasticity exist in this data of study because it'sp value is less than 5%. This is the problem of the data which has negative impact on analysis. So removes the problem of heteroskedasticity in the data.

Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.216556	-9,192	0.0

Redundant fixed effect is the test to select the criteria between the two methodologies, first is common constant method and second is fixed effect method. If the probability value is less than 5% than used fixed effect method.

Hausman Test

Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	50.76198	8	0.0

If the Hausman test value is less than 0.05 then move towards fixed effect.

Fixed Effects Regression

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
GDP	0.012103	0.001468	8.246755	0.0
FD	0.001324	0.000545	2.428744	0.0161
INST	0.15105	0.035075	4.306424	0.0
IND	0.007381	0.00232	3.181007	0.0017
POP	-0.04132	0.016815	-2.457	0.0149
R-squared	0.99798		**Adjusted R-squared**	0.997801
S.E. of regression	0.982494		**F-statistic**	5579.668
Prob(F-statistic)	0.00		**Durbin-Watson stat**	2.018302

Table 8 reveals that a one-unit change in GDP results in a significant impact on CO2 emissions, with a coefficient value of 0.012103 and a probability value of less than 5%. This indicates that economic growth has a positive and significant impact on environmental degradation. Financial development has a positive and significant impact on environmental degradation, while institutional quality has a positive and significant impact. Industrialization has a negative and significant impact on environmental degradation, with a coefficient value of 0.007381 and a probability value of less than 5%. Urbanization has a negative and significant impact on environmental degradation, with a coefficient value of -0.04132 and a probability value of less than 5%. Increasing population can decrease CO2 emissions due to better quality management. Overall, these findings highlight the importance of considering various factors in addressing environmental degradation.

Conclusion

This research article investigates the impact of institutional quality and financial development on environmental degradation from 2001 to 2021 in ten Asian nations. The study considers factors such as gross domestic product, institutional quality, industrialization, urbanization, and financial growth to check their impact on the carbons dioxide omission. Several econometric methodologies were used to analyze the data, including descriptive

statistics, pair-wise correlation, Variance Inflation Factors, Serial Correlation LM Test, and Hausman test. The Hausman test recommended the fixed effect method for the study. Results of the fixed effect method show that GDP, PD, INST and IND has positive impact on Co2 in the selected Asian Countries. While the only POP has negative effect on co2 in the selected countries. Policymakers should incorporate environmental considerations into economic policies, implementing environmental taxes and subsidies, promoting sustainable consumption and production, and incentivizing businesses to adopt environmentally responsible practices.

REFERENCE

Ahmad, M., Ahmed, Z., Yang, X., Hussain, N., & Sinha, A. (2022). Financial development and environmental degradation: do human capital and institutional quality make a difference?. *Gondwana Research*, *105*, 299-310.

Ahmad, M., Jiang, P., Majeed, A., & Raza, M. Y. (2020). Does financial development and foreign direct investment improve environmental quality? Evidence from belt and road countries. *Environmental Science and Pollution Research*, *27*, 23586-23601.

Ali, S., Ying, L., Shah, T., Tariq, A., Ali Chandio, A., & Ali, I. (2019). Analysis of the nexus of CO2 emissions, economic growth, land under cereal crops and agriculture value-added in Pakistan using an ARDL approach. *Energies*, *12*(23), 4590.

Hunjra, A. I., Cetin, M. A., Bakirtas, I., et al. (2020). The long-run environmental impacts of economic growth, financial development, and energy consumption: Evidence from emerging markets. Energy & Environment, 31(4), 634-655.

Hussain, M., & Dogan, E. (2021). The role of institutional quality and environment-related technologies in environmental degradation for BRICS. *Journal of Cleaner Production*, *304*, 127059.

Ibrahim, M. H., & Law, S. H. (2016). Institutional quality and CO2 emission–trade relations: evidence from S ub-S aharan A frica. *South African Journal of Economics*, *84*(2), 323-340.

Khan, M., & Rana, A. T. (2021). Institutional quality and CO2 emission–output relations: the case of Asian countries. *Journal of Environmental Management*, *279*, 111569.

Ntow-Gyamfi, M., Bokpin, G. A., Aboagye, A. Q., & Ackah, C. G. (2020). Environmental sustainability and financial development in Africa; does institutional quality play any role?. *Development Studies Research*, *7*(1), 93-118.

Runar, B., Amin, K., & Patrik, S. (2017). Convergence in carbon dioxide emissions and the role of growth and institutions: a parametric and non-parametric analysis. *Environmental Economics and Policy Studies*, *19*, 359-390.

Sah, P., Fitzpatrick, M. C., Zimmer, C. F., Abdollahi, E., Juden-Kelly, L., Moghadas, S. M., ... & Galvani, A. P. (2021). Asymptomatic SARS-CoV-2 infection: A systematic review and meta-analysis. *Proceedings of the National Academy of Sciences*, *118*(34), e2109229118.

Wawrzyniak, D., & Doryń, W. (2020). Does the quality of institutions modify the economic growth-carbon dioxide emissions nexus? Evidence from a group of emerging and developing countries. *Economic research-Ekonomska istraživanja*, *33*(1), 124-144.

Zakaria, M., & Bibi, S. (2019). Financial development and environment in South Asia: the role of institutional quality. Environmental Science and Pollution Research, 26, 7926-7937.