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DYNAMIC EFFECT OF EXTERNAL FINANCE IN ACHIEVING ECO-EFFICIENCY AND SUSTAINABLE DEVELOPMENT GOALS

Muhammad Naveed Jamil *, Abdul Rasheed

Institute of Business Administration, Khwaja Fareed University of Engineering and Information Technology, Rahim Yar Khan, Pakistan

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ABSTRACT

United Nations Agenda 2030 is a call to action for global issues, and sustainability is a challenge that faces everyone. The primary objective of this research is to offer first-hand insights about external financing for sustainability. In order to calculate the impact of foreign financing on eco-efficiency, the Sustainable Development Goals, and the Social, Economic, and Environmental Development of 46 Asian countries between 2000 and 2021, the study used auto-regressive distributed lag (ARDL) models. The estimation's results showed foreign direct investment failed to significantly impact any of the five models over the short- or long-term, remittances, official development assistance, foreign debt, and restriction are useful indicators for advancing social, economic, and environmental development toward eco-efficiency and sustainable development goals. The study also indicated Sustainable development Goals and Social Development are more significant as compared to the other three Models eco-efficiency, economic, and environmental development during the short run and long run. Further indicated South Eastern Asia and East Asia Region Countries have strong requirements for External finance as compared to other Asian regions and external finance had a highly significant relationship with eco-efficiency and Sustainable Development Goals in the short run and long run from 2000 to 2021. Study recommendations are cleared; the Government's systems should be designed as UN Agenda-2030 that supports the direction toward World Future Sustainability.

* Email: mnaveedknp@gmail.com

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INTRODUCTION

Imagine the world of 2030 completely inclusive, welcoming to all people, and plants peaceful and prosperous for everyone. Capability is enhanced in terms of several Sustainable Development Goals, particularly the Environmental, Social, and Governance aspects. It refers to the objective of guaranteeing the Development of individuals, sectors, and capable with no one absent basic facilities and a blueprint shared for prosperity and peace for all living things, both present and future, (Assembly, 2015). Agenda 2030 for sustainable development: 17 objectives The SDGs and "Transforming our World" reports UN scientists developed the statement "Future is now." The Secretary-General appoints a system, that is a quantitative framework for social, environmental, and economic change. Policies pertaining to production and consumption, the role of markets, the state, the climate, health, and social and economic obligations were reviewed and defined (Staniškis et al., 2022). In 1987, the WCED published the report that refers to "Our Common Future," which provided the most commonly acknowledged concept of sustainable development. Human expertise guarantees that current development satisfies current needs without risking future generations' ability to fulfill their own needs (Brundtland, 1985). Eco-efficiency is a fundamental concept that integrates environmental, sustainable, and economic development elements to encourage more effective resource utilization and reduce carbon emissions (Belucio et al., 2021). Economic and environmental performance in order means Eco-efficiency

(Hamid et al., 2022). Eco-efficiency and sustainable development Goals are further explained with the help of the circle conceptual origins concept. Figure 1 shows the component of eco-efficiency and Figure 2 shows the Component of Sustainable Development Goals

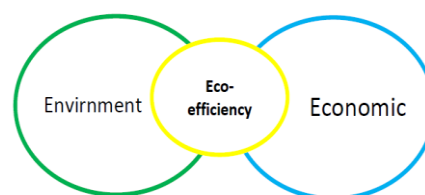


Figure 1. Component of eco-efficiency.

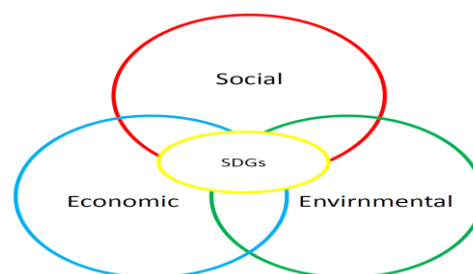


Figure 2. Component of sustainable development goals.

Figure 1 shows the combination of environmental and Economic components to develop an eco-efficiency concept and Figure 2 shows the combination of Social, Economic, and Environment factors to develop sustainable development concepts. Further, both concepts explore historical background and literature.

Historic Background

Habermas' "communicative rationality" theory, one of the most contentious ideas (Habermas, 1971), Habermas "communicative sustainability" perspective failed due to authenticity and basis. Habermas's alternative theory of sustainable development has three pillar concepts on social, economic, and environment (Habermas and Ben-Habib, 1981). First definition the of Sustainable development is "Our common future" meet the need without compromising the idea initiated (WCED, 1987). the adopted idea was "growth limits and sustainability" (Adams and Schuurman, 1993; Elliott and Elliott, 2004). Rachel Carson's first research notes on eco-efficiency and highlighted important questions about humanity's impact on nature (Carson, 1962). A huge debate on securing ecological and financial security stability for the future (Meadows et al., 1972).

This study explores completely the defined, however, three underlying pillars of sustainable development; environmental, social and economic (Goodland and Daly, 1996). Further elaborated sustainable development (Elliott and Elliott, 2004). Massive discussions on sustainability and fruitful outcomes of Agenda 21 (Elliott and Elliott, 2004). As a result, new public-private partnerships in the form of foreign funding were established (Scherr and Gregg, 2005). External financing of international debt, FDI, overseas remittances, foreign debt, trade, and credit impact on environmental, social, and economic activities leading to sustainable development (Daly et al., 2022).

World has challenged one billion people were living in slums in 2016 and less basic facilities UN-standard (Fioravanti, 2016; Mosha et al., 2022), The three most important areas that need to improve are social, economic, and environmental. Worldwide projects aimed at addressing development issues; therefore, Millennium Development Goals were initiated from 2000 to 2015 and further Paris Agreement was signed and United Nations adopted the Sustainable Development Goals Agenda-2030 and committed to enhancing the global environment, economy, and social conditions. Foreign financing's major effect on people's living and MDG Goal 7D and SDG Goal 11.1 highlight the importance of external financing (Traverso and Nangah Mankaa, 2023). Foreign financing values sustainable development, endogenous growth theory, and neo-classical growth theory support the SDGs indicators (Ramanayake, 2019; Solow, 1956) Every nation requires funds to carry out daily operations, and foreign financing is essential like blood. The primary goals of this study are to investigate how external financing contributes to eco-efficiency and the SDGs, with a focus on high-productivity cluster areas and cross-regional analysis. The Sustainable Development Goals may be harder to accomplish in nations with lower incomes and financial resources; as a result, external financing may present a chance to strengthen the economy and accomplish the SDGs (CNUCED, 2018; UNCTAD, 2018), and current literature ignores that research gap. The aforementioned important reasons, needs, and relevance are inspired by this research, which aims to close these evidently significant gaps and generate noteworthy data on the role of external financing in achieving eco-efficiency and SDGs.

Literature Background

The notions of eco-efficiency, which is based on two factors (economic and environmental), and sustainability, which is based on three factors (social, economic, and environmental), are widely used and accepted. These concepts are typically depicted as two and three intersecting circles, respectively, with overall sustainability in the Center. This paper explores and discusses pertinent historical sustainability literature in an effort to determine the origins and theoretical underpinnings of this idea. Nonetheless, it appears that the idea of the pillars came before this. We have not come across a conceptually sound explanation of the pillars elsewhere. This is believed to be partly caused by the sustainability discourse's historical emergence from widely disparate schools of thought. Approaches at a theoretically rigorous operationalization of "sustainability" are thwarted by the lack of such a conceptual framework (Purvis et al., 2019).

As these debates unfold, the UN institutionalizes "sustainable development" with the Brundland Report of 1987 and the Rio process that followed, pushing for a worldview that views economic expansion as the answer to social and ecological concerns. This "win-win" strategy, which depoliticizes sustainability and presents three sets of equally significant economic, social, and environmental goals as benign necessities, effectively neutralizes much radical criticism. It also reflects the biases engendered by their intergovernmental consensus-building mandate. This idea is strengthened by the fuzziness of the terms "sustainable development" and "sustainability," which has left economic development as an implied but poorly defined component of sustainability (Carruthers, 2001; Huckle, 1991; Purvis et al., 2019).

With the lack of research facilities in Pakistan and international literature in the subsections, the body of knowledge regarding the Sustainable Development Goals in Pakistan is incredibly limited. Therefore, research extended to Asia-level common countries' common Goals, numerous scholars have examined the relationship between external finance and growth in terms of a nation's development characteristics that are crucial in determining the country's growth in the empirical literature. However, considerations for the SDGs and eco-efficiency were disregarded (Ghani et al., 2023; Hinduja et al., 2023; Sabir and Majid, 2023).

Eco-efficiency is the largest global challenge and accounts for one-fourth of global transportation sector CO₂ emissions. UN Sustainable Development Goals Agenda-2030: The 2015 Paris Accord was the most effective global accord to date for setting goals to achieve success in the social, economic, and environmental domains. External financing is a contemporary source of funding for economic growth and technological advancement. The government must implement laws to promote foreign investors in environmentally friendly projects like contemporary technology advancement (Jamil et al., 2023b). Empirical researchers highlighted the significance of financial development and its resources, whether they are public or private, internal or foreign. For government revenue expenditure, foreign direct investment, remittances from overseas workers, official development assistance, international trade, and public debt, these resources were helpful and necessary. Actually, these elements served as markers of financial advancement (Agenda, 2015; Awdeh, 2018; Monterrey, 2000).

In order to maintain production, the contemporary industry needs funding, or investment, as it did during pre-war years and following serious obstacles to the nation's economic development and sustainability. Economic theories suggest that in order to meet the need for sustainable production, a substantial amount of FDI from outside the country is required to support domestic

investment (Dalal, 1956). Foreign direct investment plays a major role in the economic development and sustainability of inbound countries; US direct private external finance contributes to economic prosperity and the free globe (Behrman, 1960).

The eco-efficiency and SDGs are difficult to attain and require adjustments (Persaud and Dagher, 2021). Economic and environmental performance in order means Eco-efficiency (Hamid et al., 2022). A crucial idea that promotes more effective resource usage and CO2 emissions is eco-efficiency, which encompasses environmental, sustainable, and economic development components (Belucio et al., 2021). The ability to produce more goods and services with less natural resource use and less environmental effect (Picazo-Tadeo et al., 2012). Eco-efficiency is a ratio of environment and (economic) production value (Huppess and Ishikawa, 2005). External funding, such as foreign direct investment, remittances, official development assistance, and transportation power sources like oil and electricity 1% has an extremely substantial impact on eco-efficiency; SDGs, GDP, and health have highly significant inverse links; per capita GDP and government consumption have favorable relationships with eco-efficiency (Jamil and Rasheed, 2023a).

There has been conflicting evidence regarding the impact of financial flows, such as foreign direct investment (FDI), official development assistance, and foreign remittances, on sustainable economic development from 1990 to 2016 (Zardoub and Sboui, 2023). A significant indicator is that environmental development policies have no bearing on international trade and investment (Copeland and Taylor, 2004; Taylor and Copeland, 2003). When construed cautiously to ensure welfare, the United States and Canada's free trade pact was benign for other nations (Feenstra, 2015). An alternative concept of social environment is critical to the sustainability of a business and its workforce. One of a company's possible intangible assets is social capital. Social capital creates employee self-efficacy and enhances sustainability, making a company more appealing to investors and producing higher financial performance. Investors are aware of the significance of social, environmental, and employee concerns (Jamil and Rasheed, 2023b).

External debt was repairing the economy of poor countries (Chen et al., 2024; Mohsin et al., 2021). A higher financial development contributed to an improvement in the ability to obtain international financing (He and Liu, 2023; Mohsin et al., 2021). Foreign debt significant role in delivering resources toward eco-efficiency, sustainable development, and growth (Nations, 2015). Emerging and frontier markets face significant hurdles from foreign debt, foreign direct investment, and foreign trade (Jamil et al., 2023a). There is an issue with global green growth, yet trade with other nations has brought many opportunities. Export restrictions imposed on goods produced in nations with high carbon emissions would be preferable to a system of carbon tariffs (Copeland, 2012).

METHODOLOGY

This research focuses on the ways that foreign finance—that is, debt, trade, foreign debt, foreign ODA, foreign direct investment, foreign remittances, and foreign trade—helps to advance eco-efficiency and sustainable development, Socioeconomic and environmental development. The Asia-Pacific region supplied support for the UN Agenda 2030. The world needs to utterly overthrow the current system and get away from the financialized empirical technical culture that sees the world through the eyes of an investor in order to meet the concerns identified by UN Agenda 2030. Rather, it needs to accept the financial system from the perspective of

social and environmental constraints. The SDSN report (2018) estimates that a yearly global capital investment of five to seven trillion US dollars is needed to carry out the UN Agenda 2030.

A key aspect of financial research's assistance to the SDGs' realization is the discovery of new financing channels and the acknowledgment of adequate external flows of project-oriented investment. The major objective of the study is to give investors, financial players, and policymakers the knowledge they need to enhance SDG financial flows in compliance with sustainability standards.

Initially, the sample population consisted of 51 countries in the Asian region; however, the final sample size was 46 due to data availability. Reputable databases, such as the World Bank, IMF, nation's database, and trustworthy data websites, will be used to collect secondary time series data for each sample country (entity). Countries with sample populations are listed below;

Central Asian Countries; Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan,

East Asian Countries; China, Hong Kong, Japan, Macao, Mongolia, North Korea, South Korea, Taiwan South Eastern Asian Countries; Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, Vietnam.

Southern Asian Countries: Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, Sri Lanka,

Western Asian Countries: Armenia, Azerbaijan, Bahrain, Cyprus, Georgia, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syria, Turkey, United Arab Emirates, and Yemen.

Secondary time series data for each of the 51 countries in the sample size were gathered from reliable databases of the World Bank, IMF, country database, UN annual reports, credible rating agencies, and real data stream websites were among the reliable sources. For the final conclusions' estimation of variables, data from 46 nations were finalized; however, the State of Palestine, South Korea, Timor-Leste, and other countries with incomplete or un-available data during the study period (2000–2021) were not included in the study further data estimation. The model structure of dependent and independent variables is given in Figure 3.

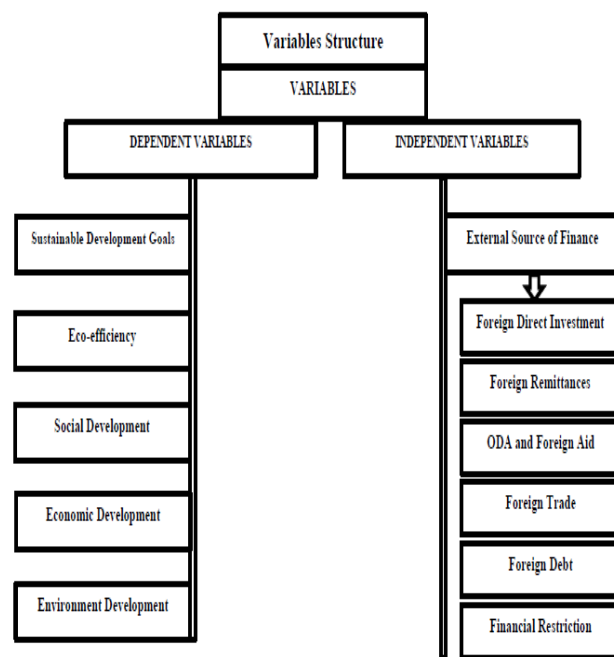


Figure 3. Variable structure and description.

Figure 3 shows the variable structure applied in this research study; seven variables of each model were selected for the estimation of results. These variables are then divided into dependent and independent variables. There were five models of this study used for data estimation.

The ratio of eco-element to production value is the general definition of eco-efficiency (Huppés and Ishikawa, 2005). We used to analyse the SDG's average scores of countries ranking and at the macro level, GDP was used to calculate eco-efficiency assessments. SDGs are defined; as the secure future of people and the planet (Griggs et al., 2013). UN SDGs Agenda-2030 indexes as; SDG.1-No-Poverty, SDG.2-Zero-Hunger, SDG.3- Good-Health and Well-Being, SDG.4 - Quality-Education, SDG.5 - Gender-Equality, SDG.6 - Clean-Water and Sanitation, SDG.7 - Affordable and Clean Energy, SDG.8 - Decent-Work and Economic-Growth, SDG.9 - Industry, Innovation and Infrastructure, SDG.10 - Reduced-Inequalities, SDG.11 - Sustainable-Cities and Communities, SDG.12 - Responsible Consumption and Production, SDG.13 - Climate-Action, SDG.14- Life-Below-Water, SDG.15 - Life-on-Land, SDG.16 - Peace, Justice and Institutions, and SDG.17 - Partnership-for-Goals.

The ranking of countries will be determined by averaging the 17 Sustainable Development Goals. The scores obtained from the World Bank Database and those data will be used as an indicator for SDGs estimation, with regard to social, economic, and environmental development as well this expands on the external finance variables of foreign debt, foreign trade, foreign investment, remittances, and net official development assistance (ODA). The concept of eco-efficiency addressed the financial, economic, and environmental facets to encourage the more economical and low-emission utilization of resources. The definition of eco-efficiency is "having its roots in business."(Mickwitz et al., 2006). Generally speaking, eco-efficiency is defined as the ratio of eco-element to production value (Huppés and Ishikawa, 2005). Eco-efficiency can be measured as CO₂ emission per capita divided by GDP per capita (World Bank). Figure 4 shows the Model structure of this study.

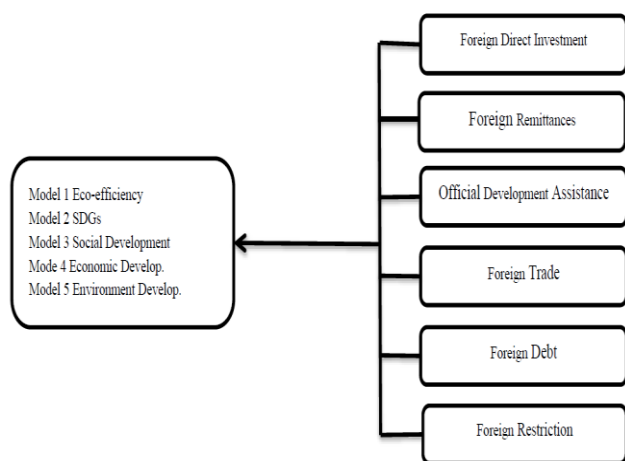


Figure 4. Models structure.

In fact, the general specification of empirical models (Daly et al., 2022) is presented as follows;

$$Eco.Efficiency_{it} = \alpha_i + \beta_1 F_{it} + \beta_2 REM_{it} + \beta_3 ODA_{it} + \beta_4 T_{it} + \beta_5 D_{it} + \beta_6 R_{it} + \epsilon \tag{1}$$

$$SDGs_{it} = \alpha_i + \beta_1 F_{it} + \beta_2 REM_{it} + \beta_3 ODA_{it} + \beta_4 T_{it} + \beta_5 D_{it} + \beta_6 R_{it} + \epsilon \tag{2}$$

$$Socail_{it} = \alpha_i + \beta_1 F_{it} + \beta_2 REM_{it} + \beta_3 ODA_{it} + \beta_4 T_{it} + \beta_5 D_{it} + \beta_6 R_{it} + \epsilon \tag{3}$$

$$Economic_{it} = \alpha_i + \beta_1 F_{it} + \beta_2 REM_{it} + \beta_3 ODA_{it} + \beta_4 T_{it} + \beta_5 D_{it} + \beta_6 R_{it} + \epsilon \tag{4}$$

$$Ecnvironment_{it} = \alpha_i + \beta_1 F_{it} + \beta_2 REM_{it} + \beta_3 ODA_{it} + \beta_4 T_{it} + \beta_5 D_{it} + \beta_6 R_{it} + \epsilon \tag{5}$$

For $i = 1 \dots N$; $t = 2000$ to 2021 , where F foreign direct investment, Rem refers to foreign remittances, ODA refers to Official Development Assistance, T for Trade, D for Debt and R refers to Foreign Restriction. The Parameter α_i is for fixed effect parameter and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 are the slope parameters. ϵ_{it} are the investigated residuals that represent deviations from the long-run relationship.

RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics of 46 Asian countries data period 2000 to 2021. Mean and Standard deviation show the potential of indicator and Skewness, Kurtosis, and Jarque-Bara showing the data normality. Table 1 shows the results of dependent and Independent variables. The Dependent Sustainable development mean (63.66375) is higher than other dependent means of Environment (7.235769), Economic (4.781029), Social (1.704251), and Eco-efficiency (1.348784) mean showing the respective potential of the dependent variable. On the other hand, the Independent variable mean; Debt mean (89.1874) higher than trade (81.36671), restriction (55.00099), Official Development Assistance (6.917148), Foreign Direct Investment (5.48721) and Remittances (5.295663) respectively have potential to influence. Similarly Standard Deviations of dependent variables; Environment (9.014739) were higher than SDGs (7.253107), Economic (6.071503), eco-efficiency (3.807776), and Social (0.1239) respectively, and Standard deviations of independent variables Debt (431.9304) higher than Trade (62.72312) FDI (18.85491), Restriction (18.87972), Remittances (7.370993) and ODA (4.478071) respectively. Skewness, Kurtosis, and Jarque-Bara results indicated the residuals are normally distributed and stable.

Table 2 shows the correlation matrix of 46 Asian countries data period 2000 to 2021. Correlation analysis shows that focus variables are uncorrelated with one another and that the research data are free of Multicollinearity. The correlation matrix checks the value between +1 and -1 and concludes the correlation results according to their values near to +1 and -1. Therefore Table 2 results show there is no series correlation between dependent and independent variables. There are mixed results of positive and negative relations with each other. Those variables are further used in the estimation of data results; therefore, it is necessary for all variables free of Multicollinearity for stable result indication.

Normality Residual Disturbance estimation

Figure 5 shows eco-efficiency in the normality test of 46 Asian countries data estimation period from 2001 to 2021. There are four methods to test normality, Skewness (-1.404532) and Kurtosis (17.97573) are higher values than (0.05) values indicating residuals are normally distributed, on the other hand; Jarque-Bara (9722.792) and their probability (0.00) indicated residual are normally distributed in study data and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 5 Model 1 eco-efficiency data are normally distributed and fit for estimation.

Table 1. Descriptive statistics.

Variable	Mean.	Median.	Std. Dev.	Skew-ness	Kurtosis	Jarque-Bara
SDG.	63.66375	64.26633	7.253107	-0.84374	4.396292	202.2829
ECO.EFFICIENCY.	1.348784	0.738244	3.807776	6.494611	143.2488	836521.1
Social.	1.704251	1.716	0.1239	-0.30151	2.50112	25.828
Economic.	4.781029	5.116913	6.071503	0.618129	24.38882	19354.92
Environment.	7.235769	3.414391	9.014739	2.585473	11.54465	4206.113
FDI.	5.48721	2.340546	18.85491	8.847744	116.294	554435.4
F.REMITTANCES	5.295663	1.662029	7.370993	2.489694	9.985909	3103.35
F.ODA	6.917148	8.370588	4.478071	-2.73089	9.128807	2841.755
F.DEBT	89.18974	43.125	431.9304	14.55145	232.6898	2260319
F.TRADE	81.36671	75.18735	62.72312	1.840881	10.99171	3264.663
F.RESTRICTION	55.00099	58.1	18.87972	-1.70074	5.921902	847.8692

Table 2 Correlation

Correlation	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. SDG.	1.00										
2. ECO.EFFICIENCY.	-0.15	1.00									
3. Social.	0.73	-0.26	1.00								
4. Economic.	-0.10	0.71	-0.13	1.00							
5. Environment.	0.04	-0.20	0.56	0.00	1.00						
6. FDI.	0.11	-0.01	0.13	0.00	-0.01	1.00					
7. F.REMITTANCES	0.07	0.09	-0.21	0.00	-0.28	-0.02	1.00				
8. F.ODA	-0.34	0.09	-0.39	0.05	-0.20	0.04	0.21	1.00			
9. F.DEBT	0.00	0.00	-0.05	-0.02	-0.06	0.00	-0.02	0.00	1.00		
10. F.TRADE	0.29	-0.05	0.43	0.04	0.23	0.17	-0.06	-0.06	0.05	1.00	
11. F.RESTRICTION	0.50	-0.08	0.54	-0.03	0.26	0.12	0.05	-0.22	0.02	0.43	1.00

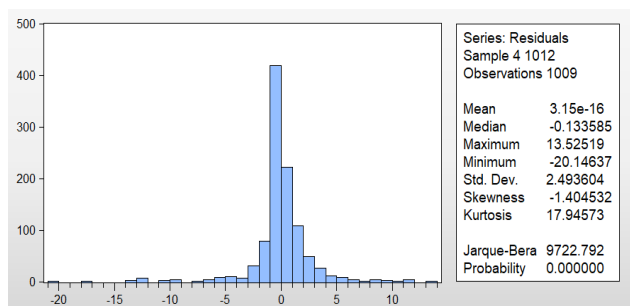


Figure 5. Eco-efficiency normality test.

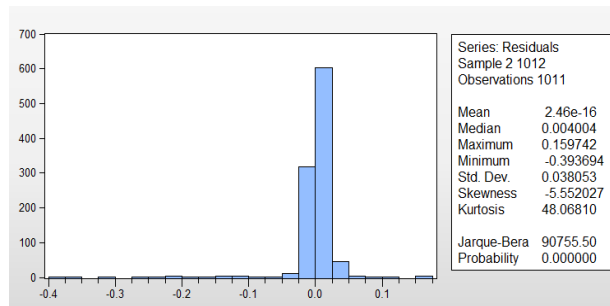


Figure 7. Social development normality test.

Figure 6 shows the Sustainable Development Goals normality test of 46 Asian countries data estimation period 2001 to 2021. There are four ways to test normality, Skewness (-4.586470) and Kurtosis (43.40544) have a higher value than (0.05) indicated residuals are normally distributed in study data, on the other hand, Jarque-Bara (72317.77) and their probability (0.00) indicated residuals are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 6 Model 2 sustainable development goals data are normally distributed and fit for estimation.

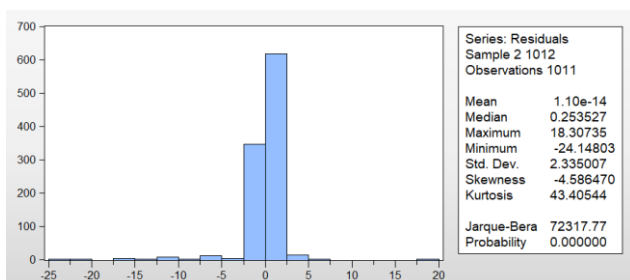


Figure 6. SDGs normality test.

Figure 7 shows the Social Development normality test of 46 Asian countries data estimation period 2001 to 2021. There are four different ways to test normality, Skewness (-5.552027) and Kurtosis (48.06810) are higher values than (0.05) indicated residuals are normally distributed data in the study, on the other hand, Jarque-Bera (90755.50) and their probability (0.00) indicated residuals are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 7 Model 3 Social development data are normally distributed and fit for estimation.

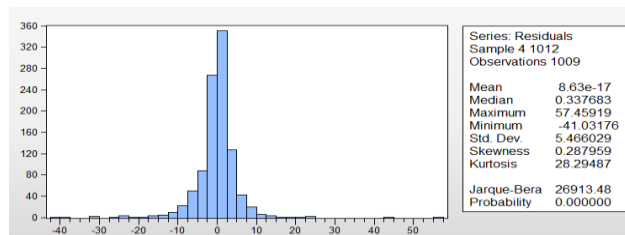


Figure 8. Economic development normality test.

Figure 8 shows the Economic Development normality test of 46 Asian countries data estimation period 2001 to 2021. There are

four ways to test normality, Skewness (5.466029) and Kurtosis (28.29487) are higher values than (0.05) therefore, indicated residuals are normally distributed, on the other hand, Jarque-Bara (26913.48), and their probability (0.00) indicated residuals are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, it is concluded that results of Figure 8 Model 4 Economic development data are normally distributed and fitted for estimation.

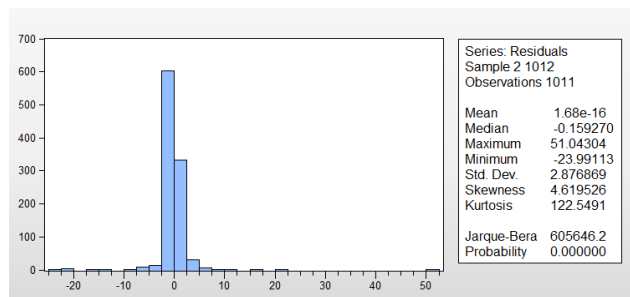


Figure 9. Environment development normality test.

Figure 9 shows the Environment Development normality test of 46 Asian countries' data estimation period from 2001 to 2021. There are four estimation methods to test normality; Skewness (4.619526) and Kurtosis (122.5491) are higher values than (0.05) indicating residuals are normally distributed data in the study, on the other hand, Jarque-Bara (605646.2) and their probability (0.00) indicated residuals are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, it is concluded that results of Figure 9 Model 5 Environment development data are normally distributed and fit for estimation.

Table 3. Bound test.

Null Hypothesis: No long-run relationships exist.			
Test Statistic-Significance	I0-Bound	I1-Bound	Value.
F-statistic (Eco-efficiency)			35.00904
F-statistic (SDGs)			10.13640
F-statistic (Social)			9.453628
F-statistic (Economic)			28.79958
F-statistic (Environment)			6.959555
Critical Value Bounds			
10%	2.53	3.59	
5%	2.87	4	
1%	3.6	4.9	

Table 3 shows the Bound test of 46 Asian Countries data period 2000 to 2021. The bound test is used to estimate co-integration between the upper and lower bound values, if the F statistic value is more than 10 % bound value then we say the model is fitted and good results are established, and no long-run relationship between the model variables. If the bound value is between the upper and lower bound or low then we conclude model is not fitted and there is co-integration between variables exists. Eco-efficiency bound F statistic value (35.00904) above the upper bound value (3.59) and lower bound value (2.53) therefore indicating no co-integration between model variable and model fitted for estimation. Similarly, while SDGs F statistic value (10.13640), Social development F statistic value (9.453628). Economic development F statistic value (28.79958) and Environment development F statistic values (6.959555) are above the 10% upper value (3.59) and lower bound (2.53) values therefore, there is no co-integration between model's variable and models fitted for estimation.

Table 4 shows the external finance effect on eco-efficiency, SDGs, Social, Economic, and Environment Development in 46 Asian countries period from 2000 to 2021. The result of external finance indicator Foreign direct investment (-0.00186), (-0.00165), (-0.00146) were negative insignificant in Models 1, 4 & 5 and (0.00414), (6.90005) were positive insignificant in Model 2 & 3 impacts on eco-efficiency, SDG, Social, Economic and Environment development respectively. Second Remittances in Model 1, 2 & 4 (0.0288**), (0.0248**) (0.00402) were positive and Model 3 & 5 (-0.00028) (-0.0231**) respectively were negative effect on eco-efficiency, SDG, Social, Economic and environment development at their own significant level. Third official Development Assistance (ODA) in Model 1 & 4 (0.02253), (0.03866) respectively were positively insignificant, and Model 2, 3 & 5 (-0.067***), (-0.001***) and (-0.02151) respectively were negative impact on eco-efficiency, SDG, Social, Economic and environment development at their own significant level. Fourth Foreign debt in Models 1, 2, 3, 4 & 5 (-0.00010), (-0.0004**), (-7.720***), (-0.00051), (-0.00015) respectively had a negative effect on eco-efficiency, SDG, Social, Economic and environment development respectively. Fifth Trade in Model 1, 2, 3, 4 & 5 (0.00200), (0.00122), (7.270***), (0.0064**), (0.00145) respectively had a positive impact on eco-efficiency, SDG, Social, Economic, and environment development at their own significant level.

Table 4. External Finance Impact on eco-efficiency, SDGs, social, economic and environmental development.

Variable	Eco-efficient-Coefficient	SDGs-Coefficient	Social-Development Coefficient	Economic-Development Coefficient	Environment-Development Coefficient
	Model 1	Model 2	Model 3	Model 4	Model 5
FDI	-0.00186	0.00414	6.90005	-0.00165	-0.00146
F.REMITTANCES	0.0288**	0.0248**	-0.00028	0.00402	-0.0231**
F.ODA	0.02253	-0.067***	-0.001***	0.03866	-0.02151
F.DEBT	-0.00010	-0.0004**	-7.720***	-0.00051	-0.00015
F.TRADE	0.00200	0.00122	7.270***	0.0064**	0.00145
F.RESTRICTION	-0.00321	0.021***	0.003***	-0.01011	0.00656
C.	0.6857**	6.013***	0.188***	2.851***	0.23833
@TREND.	-0.0006**	-0.00038	-4.14006	-0.00055	0.00011
R-squared.	0.210945	0.894962	0.904932	0.098989	0.898220
Durbin-Watson stat.	1.690209	1.920342	1.850500	2.009937	1.928196
Log-likelihood.	-2353.161	-2291.390	1870.697	-3145.048	-2502.328
F-statistic.	26.68***	1067.1***	1192.2***	10.964***	1105.***
H-Quinn. Criteria.	4.706511	4.567354	-3.666250	6.276157	4.984642

The sixth Restriction in Models 1 & 4 (-0.00321) and (-0.01011) respectively were negative and in Models 2, 3 & 5 (0.021***), (0.003***), and (0.00656) respectively positive impact on eco-efficiency, SDG, Social, Economic and environment development at their own significant level. Further constant showing Model 1 to 5 (26.680***), (1067.1***), (1192.2***), (10.964***), and (1105.3****) respectively 99% result and models stability. On the other hand, Trend only Model 1 (-0.0006**) Moderating significant and other models' insignificant results produce, the mean trend of the country is not significant and needs to change, improve financial policies. R-squared Model 1 to 5 (0.210945), (0.894962), (0.904932), (0.098989), and (0.898220) also indicated the estimated models fit and sustainable. Durbin Watson values of all five models near to 2 and f-statistic significant value also an indication of estimation sustainability. The conclusion is that Sustainable Development Goals Model 2 and Social Development Model 3 highly recommended external financial inflow and ODA, Foreign Debt, and Foreign Restriction as strong indicators of external finance in Asian countries from 2000 to 2021.

Table 5 shows the external finance relationships with eco-efficiency, SDGs, Social, Economic, and environmental development in the short run and long run in 46 Asian countries period 2000 to 2021. Table 5 results indicated foreign direct investment has no significant relationship with all five models of eco-efficiency, SDG, Social, Economic, and environment development respectively in the short run as well as the long run. Remittance was significant with Model 1, 2 & 5 in the short run, on the other hand long run significant with Model 1, 2, 3 & 5 in the long run effect on eco-efficiency, SDG, Social, Economic, and environmental development respectively. Official development Assistance is significant in Models 2 & 3 in the short run as well as the long run effect on eco-efficiency, SDG, Social,

Economic and environmental development respectively. Similarly, Debt is significant also in Model 2 & 3 short-run and long-run effects on eco-efficiency, SDG, Social, Economic, and environment development respectively. Other external finance indicators Trade is significant in Model 3 & 4 in the short run, while long-run significant in Model 4 impact on eco-efficiency, SDG, Social, Economic and environment development respectively. The restriction is significant in Models 2 & 3 in the short run as well as in the long run effect on eco-efficiency, SDG, Social, Economic, and environment development respectively. Table 5 result indicates SDGs and Social Development Models are strongly affected by external finance as compared to other Models of eco-efficiency, economic and environment, and Official development, Debt and restriction are stronger indicators as compared to FDI, Remittances, and Trade in the Asian region countries during 2000 to 2021.

Table 6 shows the external finance impact on eco-efficiency in the short and long run in Asian Regions i.e. Central Asia, East Asia, South Eastern Asia, Southern Asia, and Western Asia period 2000 to 2021. The Results of Table 6 Indicated Central Asia's eco-efficiency Coefficient is insignificant with all six external finance indicators in the short and long run. In East Asian countries results indicated foreign debt and Restriction highly significant with eco-efficiency in the short and long run. In South Eastern Asia Remittance, Trade, and Restriction are highly significant with eco-efficiency in the short, while remittance and Debt in the long run. In Southern Asia, only Remittances have moderate significance with eco-efficiency in the short and long run. In Western Asia, only trade has a 90% significant relationship with eco-efficiency. Therefore, result concludes that East Asia and South Eastern Asia eco-efficiency have a strong and important relationship with external finance in the short and long run as compared to other Asian regions period 2000 to 2021.

Table 5. External finance short run and long run relationships.

Short-Run-Relationship (Co-integrating Form)					
Variable.	Eco-efficiency Coefficient.	SDGs-Coefficient.	Social-Coefficient.	Economic-Coefficient.	Environment-Coefficient.
D.FDI.	-0.00186	0.004145	0.000069	-0.001653	-0.001469
D.F.REMITTANCES	0.0288**	0.02481*	-0.000285	0.004028	-0.02311*
D.F.ODA	0.02253	-0.0678***	-0.0011***	0.038668	-0.021513
D.F.DEBT	-0.00010	-0.00044*	-0.0008***	-0.000512	-0.000154
D.F.TRADE	0.00200	0.001221	0.0073***	0.00640**	0.001450
D.F.RESTRICTION	-0.00321	0.0218***	0.0003***	-0.010118	0.006560
D.@TREND.	-0.0006**	-0.000384	-0.000004	-0.000550	0.000117
CointEq (-1).	-0.524***	-0.1060***	-0.1186***	-0.5905***	-0.0667***
Long-Run-Relationship (Long Coefficients)					
Variable.	Eco-efficiency Coefficient.	SDGs- Coefficient.	Social- Coefficient.	Economic-Coefficient.	Environment-Coefficient.
FDI	-0.00355	0.039074	0.000581	-0.002799	-0.021992
F.REMITTANCES	0.055***	0.23388**	-0.00240*	0.006822	-0.34598*
F.ODA	0.04295	-0.6395***	-0.0093***	0.065480	-0.322051
F.DEBT	-0.00019	-0.00415**	-0.0065***	-0.000867	-0.002311
F.TRADE	0.00381	0.011506	0.000612	0.01085**	0.021710
F.RESTRICTION	-0.00611	0.2057***	0.0030***	-0.017133	0.098205
C.	1.3069**	56.683***	1.5848***	4.8293***	3.567903
@TREND.	-0.0012**	-0.003618	-0.000035	-0.000931	0.001757

Table 6. External finance relationships with eco-efficiency (Individual Asian Region).

Short-run-Relationship					
Variable.	Central Asia Eco-efficiency- Coefficient	East Asia Eco-efficiency- Coefficient	South-Eastern Eco-efficiency- Coefficient	Southern Asia Eco-efficiency- Coefficient	Western Asia Eco-efficiency- Coefficient
D(FDI).	-0.040268	-0.005634	-0.102880	0.491450	-0.003210
D(F.REMITTANCES)	0.015008	0.055318	-0.14273**	0.45949**	-0.020295
D(F.ODA)	0.138389	-0.049040	-0.189852	0.230607	-0.031112
D(F.DEBT)	0.012774	-0.0091***	0.116180	0.022879	0.004118
D(F.TRADE)	0.021804	0.010822	0.5805***	0.046482	0.01171*
D(F.RESTRICTION)	-0.067407	0.06618**	0.1037***	-0.249786	-0.002746
D (@ TREND ()).	-0.002080	-0.02272**	0.000145	-0.020560	-0.003373
CointEq (-1).	-0.2890***	-0.7598***	-0.082215	-0.6665***	-0.3410**
Long-Run-Relationship					
Variable.	Central Asia Eco-efficiency- Coefficient	East Asia Eco-efficiency- Coefficient	South-Eastern Eco-efficiency- Coefficient	Southern Asia Eco-efficiency- Coefficient	Western Asia Eco-efficiency- Coefficient
FDI.	-0.139310	-0.007414	-0.704294	0.737288	-0.009413
F.REMITTANCES	0.051922	0.072800	0.430995	0.68935**	-0.059504
F.ODA	0.478762	-0.064539	2.1536***	0.345965	-0.091218
F.DEBT	0.044193	-0.0120***	0.3847***	0.034324	0.012073
F.TRADE	0.075432	0.014242	0.000538	0.069733	0.03433*
F.RESTRICTION	-0.233198	0.0871***	-0.304993	-0.374737	-0.008051
C.	7.103690	-3.120553	8.585875	18.942946	-0.639723
@TREND.	-0.007196	-0.02990**	-0.042835	-0.030845	-0.009890

Table 7. External finance relationships with sustainable development Goals (Individual Asian Region).

Short-Run-Relationship						
Variable.	Central Asia SDGs- Coefficient.	East Asia SDGs- Coefficient.	South-Eastern SDGs- Coefficient.	Southern Asia SDGs- Coefficient.	Western Asia SDGs- Coefficient.	
D (FDI).	0.1043**	-0.012637	-0.11206*	0.2781***	0.003008	
D(F.REMITTANCES)	0.01241	0.6348***	-0.081571	0.06182*	-0.000402	
D(F.ODA)	-0.06446	-0.5735***	0.07052**	-0.06378**	-0.002928	
D(F.DEBT)	0.00084	0.00623**	-0.1426***	-0.002411	0.001141	
D(F.TRADE)	-0.0138*	-0.0715***	-0.3207***	0.010720	-0.000192	
D(F.RESTRICTION)	0.190***	0.043907	-0.0413***	0.054826	0.0320***	
D(@TREND())	0.0159**	0.0790***	-0.00774**	-0.002374	-0.00265**	
CointEq(-1)	-0.351***	-0.4276***	0.1215***	-0.1523***	-0.1113***	
Long-Run-Relationship						
Variable.	Central Asia SDGs- Coefficient.	East Asia SDGs- Coefficient.	South-Eastern SDGs- Coefficient.	Southern Asia SDGs- Coefficient.	Western Asia SDGs- Coefficient.	
FDI.	0.2964**	-0.029553	0.18127*	1.8253***	0.027020	
F.REMITTANCES	0.03528	1.4847***	-0.3667***	0.405662	-0.003612	
F.ODA	-0.18314	-1.3413***	-0.8244***	-0.41852**	-0.026305	
F.DEBT	0.00239	0.01457**	-0.1061***	-0.015820	0.010254	
F.TRADE	-0.0392**	-0.1672***	-0.0198***	0.07034*	-0.001729	
F.RESTRICTION	0.5414***	0.102678	0.3124***	0.359758	0.2879***	
C.	37.8730***	67.1478***	47.2701***	38.1669***	50.1355***	
@TREND.	0.0452**	0.1847***	0.0582***	-0.015576	-0.02389**	

Table 7 shows the external finance impact on Sustainable Development Goals in the short and long run in Asian Regions i.e. Central Asia, East Asia, South Eastern Asia, Southern Asia and Western Asia period 2000 to 2021. The Results of Table 7 Indicated in Central Asia FDI, Trade and restriction have high significant relation with SDGs. In East Asia Remittances, ODA, Debt, and Trade have a highly significant relationship with SDGs in the short and long run. In South Eastern Asia all external finance indicators have a strong significant relationship with SDGs in the short run and long run. In Southern Asia FDI, Remittances, and ODA in the short run and FDI, ODA, and Trade in long run have significant relationships with SDGs. In Western Asia, only restrictions have high significant impact on SDGs. Figure 7 results conclude that South-Eastern Asia has a strong relationship with external finance and its high importance for those countries and East Asia countries on second importance place of external finance and other regions have a significant but less relationship with SDGs.

CONCLUSIONS AND RECOMMENDATION

This study's primary goals were to investigate the impact of foreign financing on the eco-efficiency, SDGs, social, economic, and environmental development in 46 Asian nations between 2000 and 2021 by using the Auto-regressive Distributed Lag (ARDL) Model. The international community has considered development financing throughout the past 22 years, having considered the Monterrey Consensus of the international conference held in Mexico in March 2002, which called for mobilizing financial resources to meet the universally agreed-upon Millennium Development Goals. Additional expansion and a fresh UN development agenda that extends development funds were taken into consideration. Actually, it has been stated that the effective use of novel and first-hand financial resources for social, economic, and environmental development is of utmost importance globally. Thus, the primary goal of this research is to determine whether development resources have the capacity and

capability to meet the needs of stable states. Therefore, study applied external financial indicators on eco-efficiency, SDGs, and social-economic-environment development toward nation stability and estimated through the Auto-regressive Distributed Lag (ARDL) Models. The following is the valuable conclusion gained from the long-term estimation;

Theoretically and conclusion results first stated that Remittances, ODA, foreign debt, and foreign restriction are helpful indicators in improving sustainable development goals and social and economic development during the short run and long run in Asian countries during 2000 to 2021. Second, Foreign direct investment was a failure and was insignificant with all models during the short run and long run in Asian countries from 2000 to 2021. Third, Sustainable Development Goals Model 2 and Social Development Model 3 are more significant as compared to the other three Models eco-efficiency, economic and environmental development during the short run as well as the long run in Asia from 2000 to 2021. Fourth, South Eastern Asia and East Asia Region Countries have strong requirements for External finance as compared to other Asian regions and external finance has a highly significant relationship with eco-efficiency and Sustainable Development Goals in the short run and long run from 2000 to 2021.

According to the study's calculations above five Models, there are various policy recommendations and consequences;

The government needs to promote remittance to achieve the development of a country. Foreign debt is a burden on nations but it fulfills the financial need and extends the development of nations. Restriction is a useful indicator to control finance and manage finance according to requirements. Trade is important but not at the cost of environmental degradation, and social and economic implications. Foreign direct investment is also useful in investment enhancement if the country manages it properly. Countries need to promote financial indicator that enhances the financial needs of countries toward countries' development.

Finally, countries need to follow UN Sustainable Development Goals Targets because it's a universal call to nations and it's useful for World social, economic, environmental, and financial sustainability.

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