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

Efeito dinâmico do financiamento externo na consecução dos objetivos de ecoeficiência e desenvolvimento sustentável

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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, environment development toward eco-efficiency and sustainable development goals. Study also indicated Sustainable development Goals and Social Development is more significant as compare to other three Models eco-efficiency, economic and environment development during short run and long run. Further indicated South Eastern Asia and East Asia Region Countries have strong requirement of External finance as compare to other Asian regions and external finance was highly significant relationship with eco-efficiency and Sustainable Development Goals in short run and long run during 2000 to 2021. Study recommendations are cleared; Government's systems should be designed as UN Agenda-2030 that supporting direction toward World future Sustainability.
Key Word: External Finance, Eco-efficiency, Sustainable Development Goals.

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EFEITO DINÂMICO DO FINANCIAMENTO EXTERNO NA CONSECUÇÃO DOS OBJETIVOS DE ECOEFICIÊNCIA E DESENVOLVIMENTO SUSTENTÁVEL

Dynamic effect of external financing on the achievement of eco-efficiency and sustainable development objectives

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RESUMO

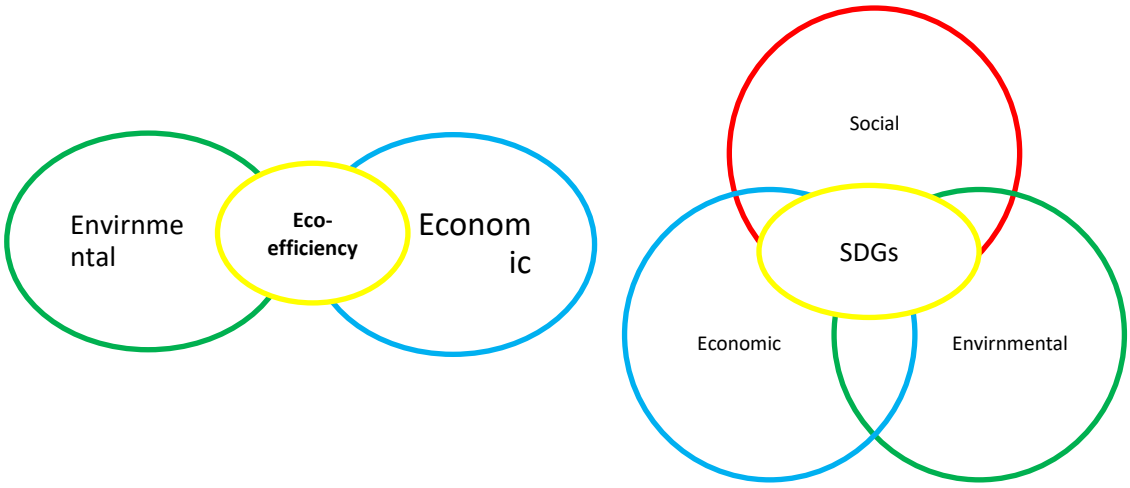
A Agenda 2030 das Nações Unidas é um apelo à ação para questões globais, e a sustentabilidade é um desafio que todos enfrentam. O objetivo principal desta pesquisa é oferecer insights em primeira mão sobre financiamento externo para sustentabilidade. Para calcular o impacto do financiamento estrangeiro na ecoeficiência, nos Objetivos de Desenvolvimento Sustentável e no Desenvolvimento Social, Econômico e Ambiental de 46 países asiáticos entre 2000 e 2021, o estudo utilizou modelos de defasagem distribuída autorregressiva (ARDL). Os resultados da estimativa mostraram que o investimento estrangeiro direto não teve um impacto significativo em nenhum dos cinco modelos a curto ou longo prazo, remessas, assistência oficial ao desenvolvimento, dívida externa e restrição são indicadores úteis para o avanço do desenvolvimento social, econômico e ambiental em direção à ecoeficiência e aos objetivos de desenvolvimento sustentável. O estudo também indicou que os Objetivos de Desenvolvimento Sustentável e o Desenvolvimento Social são mais significativos em comparação com outros três modelos de ecoeficiência, desenvolvimento econômico e ambiental a curto e longo prazo. Além disso, indicou que os países da região do Sudeste Asiático e do Leste Asiático têm forte necessidade de financiamento externo em comparação com outras regiões asiáticas e o financiamento externo foi uma relação altamente significativa com a ecoeficiência e os Objetivos de Desenvolvimento Sustentável no curto e longo prazo durante 2000 a 2021. As recomendações do estudo são liberadas; Os sistemas do governo devem ser projetados como a Agenda 2030 da ONU, que apoia a direção para a sustentabilidade futura mundial.

Palavras-chave: Finanças Externas, Ecoeficiência, Objetivos de Desenvolvimento Sustentável.

INTRODUCTION

Imagine the world-2030 completely inclusive, welcoming to all people and plants peaceful and prosperous for everyone. Capability enhanced in term of several Sustainable Development Goals, particularly the Environmental, Social, and Governance aspects. While its 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 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. The human expertise to guarantee that current development satisfies current need without risking future generations' ability to fulfil their own needs (Environment & Development, 1987). Eco-efficiency is a fundamental concept that integrates environmental, sustainable, and economic development elements to encourage more effective resource utilization and reduced carbon emissions (Belucio, Rodrigues, Antunes, Freire, & Dias, 2021). Economic and environmental performance in order means Eco-efficiency (Hamid et al., 2022). Eco-efficiency and sustainable development Goals further explain with the help of circle conceptual origins concept.

Figure 1 - Two and Three circle conceptual origins of Eco-efficiency, SDGs and their comparison



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 alternative theory of sustainable development three pillar concepts on social, economic and environment (Habermas & Ben-Habib, 1981). First definition the Sustainable development “Our common future” meet the need without compromising idea initiate (WCED, 1987). the adopted idea was “growth limits and sustainability” (Adams & Schuurman, 1993; Elliott & Elliott, 2004).

This study explore to completely the defined, however three underlying pillars of sustainable development; environmental, social and economic (Goodland & Daly, 1996). Further elaborated sustainable development (Elliott & Elliott, 2004). Massive discussions on sustainability and fruitful outcome of Agenda 21 (Elliott & Elliott, 2004). As a result, new public-private partnerships in the form of foreign funding were established (Scherr & 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, Benali, & Yagoub, 2022).

World have challenge one billion people were living in slums in 2016 and less basic facilities UN-standard (Fioravanti, 2016; Mosha, Sungirirai, Dick, & Paradza, 2022), The three most important areas need to improve are social, economic, and environmental. Worldwide projects aimed at addressing development issues; therefore Millennium Development Goals are initiating during 2000 to 2015 and further Paris agreement signed and United Nation adopt Sustainable Development Goals Agenda-2030 and committed to enhancing the global environment, economy, and social conditions. The foreign financing major effect on people's living and MDG Goal 7D and SDG Goal 11.1highlight the importance of external financing (Traverso & Nangah Mankaa, 2023).

The foreign financing valued sustainable development, endogenous growth-theory and Neo classical growth-theory supportive 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; Trade & Development, 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.

1 LITERATURE BACKGROUND

The notions of eco-efficiency, that 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, Mao, & Robinson, 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).

Their 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 at Asia level common countries common Goals, numerous scholars have examined the relationship between external finance and growth in terms of a nation's development characteristic that are crucial in determining the country's growth in the empirical literature. However, considerations for the SDGs and eco-efficiency were disregarded (Ghani, Mahmood, Finkbeiner, Kaltschmitt, & Gheewala, 2023; Hinduja, Mohammad, Siddiqui, Noor, & Hussain, 2023; Sabir & 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, RASHEED, & MUKHTAR, 2023). 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 previous 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 & 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, Beltrán-Esteve, & Gómez-Limón, 2012). Eco-efficiency a ratio among environment and (economic) production value (Huppes & 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 favourable relationships with eco-efficiency (Jamil & 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 & Sboui, 2023). A significant indicator that environmental development policies have no bearing on international trade and investment (Copeland & Taylor, 2004; Taylor & Copeland, 2003). When construed cautiously to ensure welfare, the United States and Canada's free trade pact was benign for other nations (Feenstra, 2015a, 2015b). 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 & Rasheed, 2023b).

External debt was repairing the economy of poor countries (Chen, Ma, Kchouri, & Ribeiro-Navarrete, 2024; Mohsin, Ullah, Iqbal, Iqbal, & Taghizadeh-Hesary, 2021). A higher financial development contributed to an improvement in the ability to obtain international financing (He & 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 trades (Jamil, Rasheed, Maqbool, & Mukhtar, 2023). 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 than a system of carbon tariffs (Copeland, 2012).

2 RESEARCH 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, Social economic and environment development. The Asia-Pacific region supplied support for 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 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,

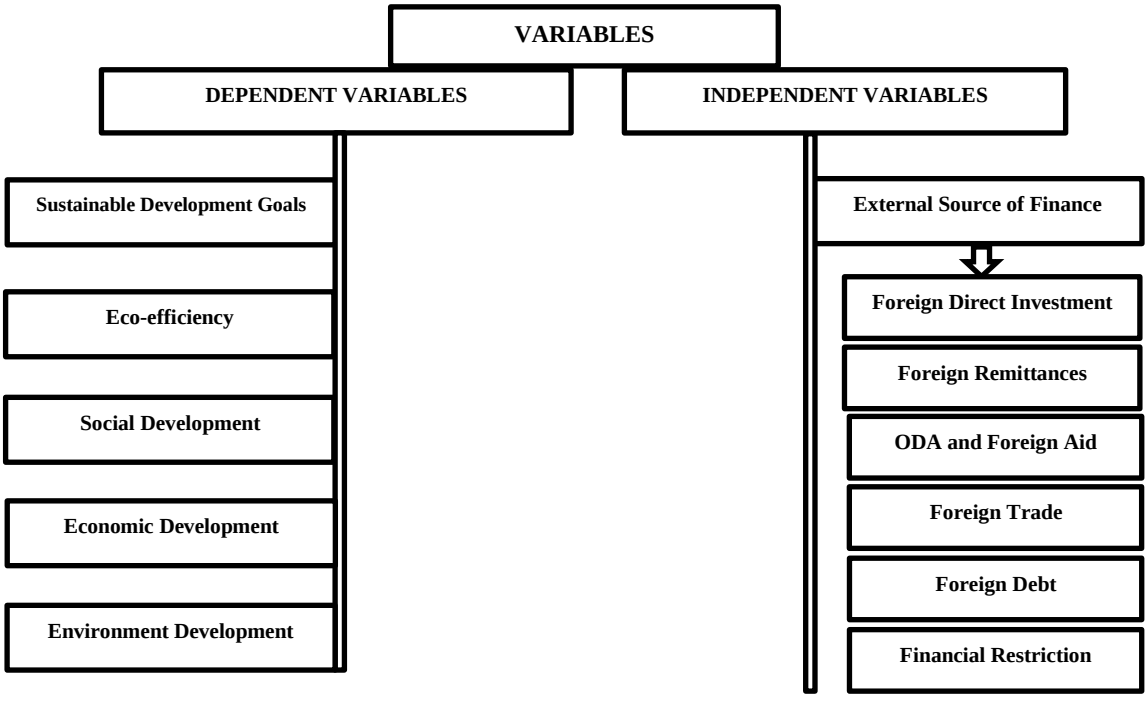
East Asian Countries; China, Hong Kong, Japan, Macao, Mongolia, North Korea, South Korea, Taiwan South Eastern Asian Countries; Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, Vietnam.

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 World Bank, IMF, country data base, 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 study further data estimation. Model structure of dependent and independent variable given below.

Figure 2 - Variables Structure



For this research study seven variables of each model was selected for estimation of results. These variables are then divided into dependent and independent variables. There were five models of this study.

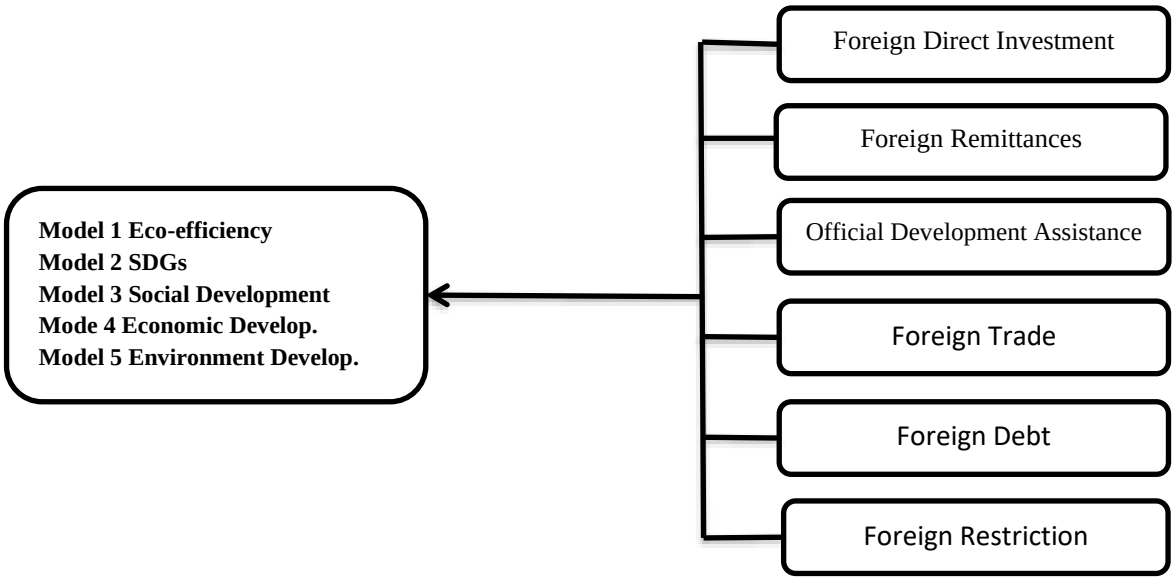
The ratio of eco-element to production value is the general definition of eco-efficiency (Huppes & Ishikawa, 2005). We used to analyse the SDGs average scores of countries ranking and at the macro level, GDP was used to calculate eco-efficiency assessments. SDGs defined; the secure the future of people and 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 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, Melanen, Rosenström, & Seppälä, 2006). Generally speaking, eco-efficiency is defined as the ratio of eco-element to production value (Huppes & Ishikawa, 2005). Eco-efficiency can be measured as CO_2 emission per capita divided by GDP per capita (World Bank).

Figure 3 - Models Structure



In fact, the general specification of empirical models (Daly et al., 2022) we try to examination can be presented as follows;

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

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

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

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

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

For $_i$ = 1….N; $_t$ = 2000 to 2021, where F foreign direct investment, Rem refer to foreign remittances, ODA refer to Official Development Assistance, T for Trade, D for Debt and R refer to Foreign Restriction. The Parameter α_i is for fixed effect parameter and $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ *and* $\beta_6$are the slope parameters. $_{it}$ are the investigate residuals that represent deviations from the long run relationship.

3 ANALYSIS AND RESULTS

Table 1 - Descriptive statistic

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 1 shows the descriptive of 46 Asian countries data period 2000 to 2021. Mean and Standard deviation are showing the potential of indicator and Skewness, Kurtosis and Jarque-Bara showing the data normality. Table 1 results shows dependent variable SDGs mean 63.66375 higher as compare to Environment 7.235769, economic 4.781029, Social 1.704251 and Eco-efficiency 1.348784 respectively potential of dependent variable. On other hand, Independent variable 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 potential to influence. Similarly Standard Deviations of dependent variable Environment9.014739, SDGs 7.253107, Economic 6.071503, eco-efficiency 3.807776 and Social 0.1239 respectively. 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 showing Debt higher values 14.55145, 232.6898 and 2260319 respectively as compare to other variables indicated the residuals are normally distributed and stable.

Table 2 - 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

Table 2 shows the correlation matric 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. Correlation matric check the value between +1 and -1 and conclude the correlation results according their values near to +1 and -1. Therefore Table 2 results showing there is no series correlation between dependent and independent variables. There is mixed results of positive and negative relations each other. Those variable are further used in estimation of data results, therefore its necessary all variable free of Multicollinearity for stable result indication.

Normality Residual Disturbance estimation

Figure 4 - Eco-efficiency Normality Test

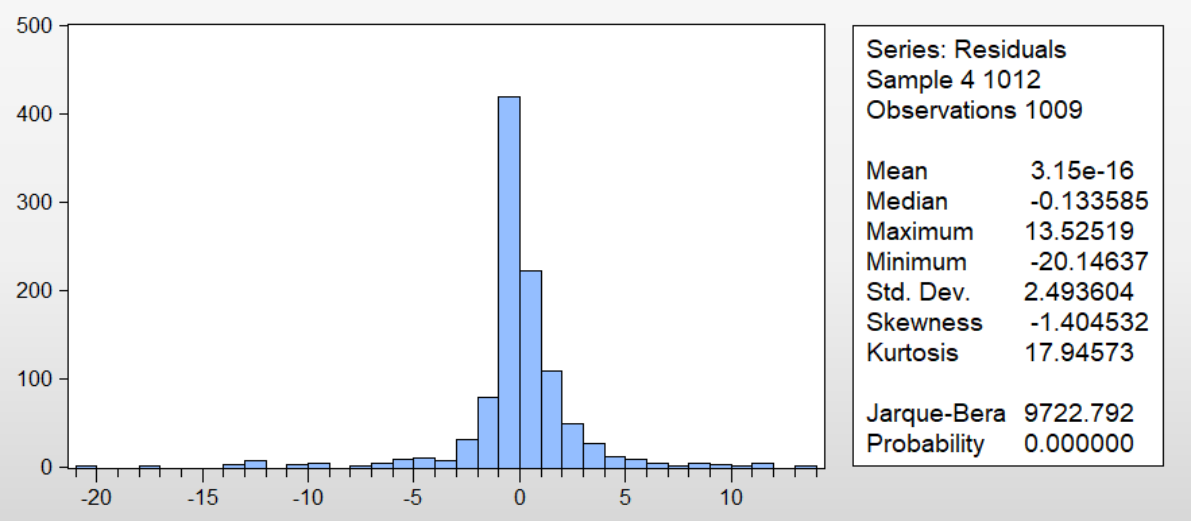


Figure 4 shows the normality test of eco-efficiency 46 Asian countries data estimation period from 2001 to 2021. There is four way to test normality, Skewness -1.404532 and Kurtosis 17.97573 is higher value than 0.05 therefore, indicated residuals are normally distributed, on other hand, Jarque-Bara 9722.792 and their probability 0.00 indicated residual are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 1 model 1 eco-efficiency data is normally distributed and fitted for estimation.

Figure 5 - SDGs Normality Test

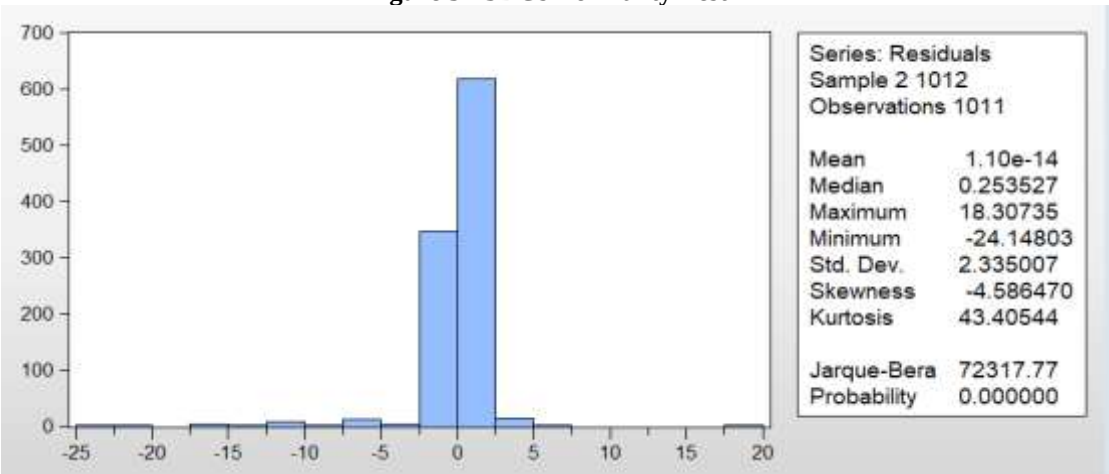


Figure 5 shows the normality test of SDGs 46 Asian countries data estimation period 2001 to 2021. There is four way to test normality, Skewness -4.586470 and Kurtosis 43.40544 is higher value than 0.05 therefore,

indicated residuals are normally distributed, on other hand, Jarque-Bara 72317.77 and their probability 0.00 indicated residual are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore conclude results of Figure 2 model 2 sustainable development goals data is normally distributed and fitted for estimation.

Figure 6 - Social Development Normality test

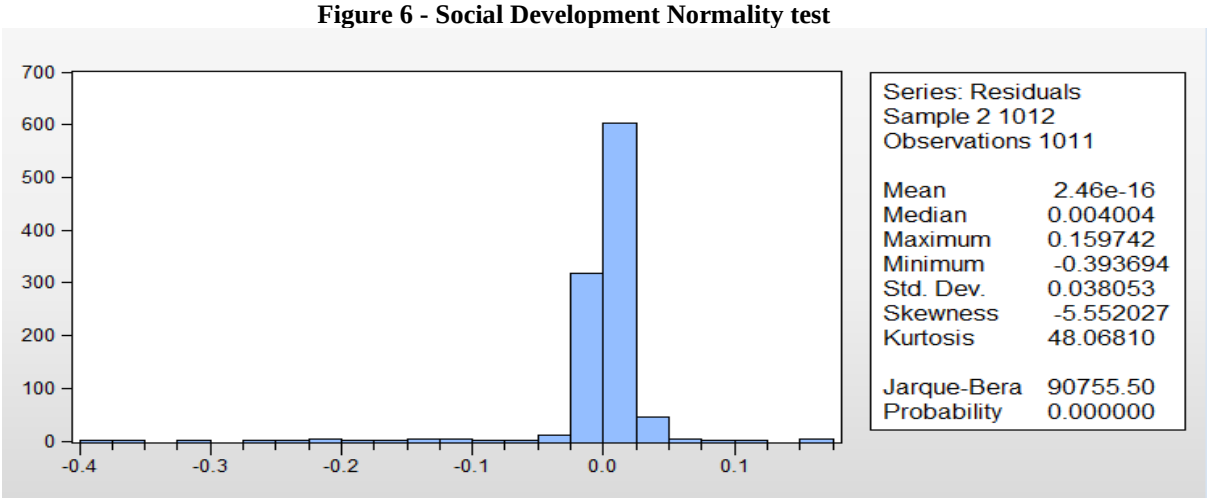


Figure 6 shows the normality test of Social Development of 46 Asian countries data estimation period 2001 to 2021. There is four way to test normality, Skewness -5.552027 and Kurtosis 48.06810 is higher value than 0.05 therefore, indicated residuals are normally distributed, on other hand, Jarque-Bara 90755.50 and their probability 0.00 indicated residual are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 3 model 3 Social development data is normally distributed and fitted for estimation.

Figure 7 - Economic Development Normality Test

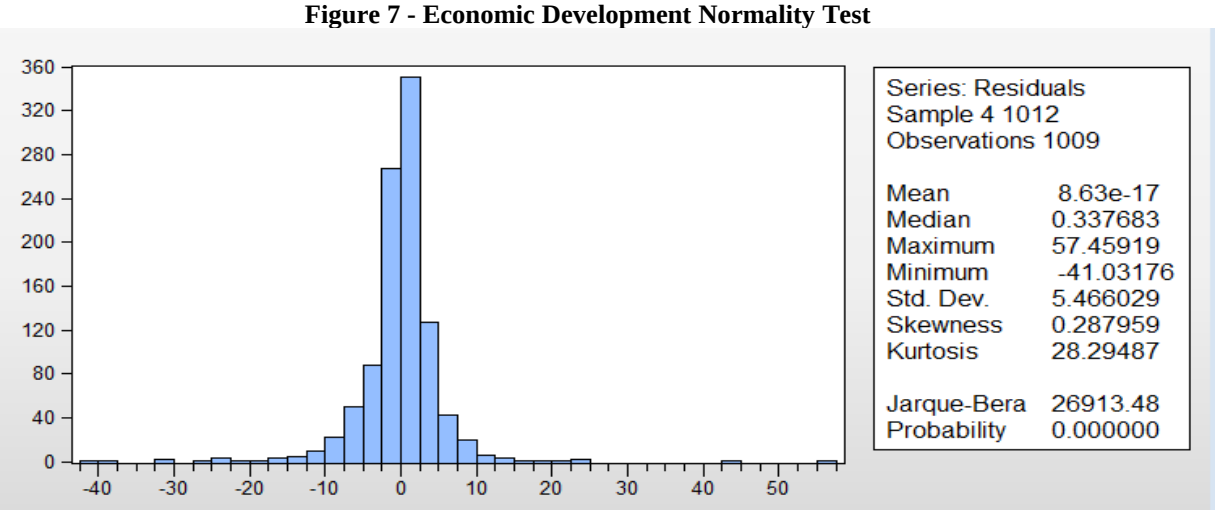


Figure 7 shows the normality test of Economic Development of 46 Asian countries data estimation period 2001 to 2021. There is four way to test normality, Skewness 5.466029 and Kurtosis 28.29487 is higher value than 0.05 therefore, indicated residuals are normally distributed, on other hand, Jarque-Bara 26913.48 and their probability 0.00 indicated residual are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 4 model 4 Economic development data is normally distributed and fitted for estimation.

Figure 8 - Environment Development Normality Test

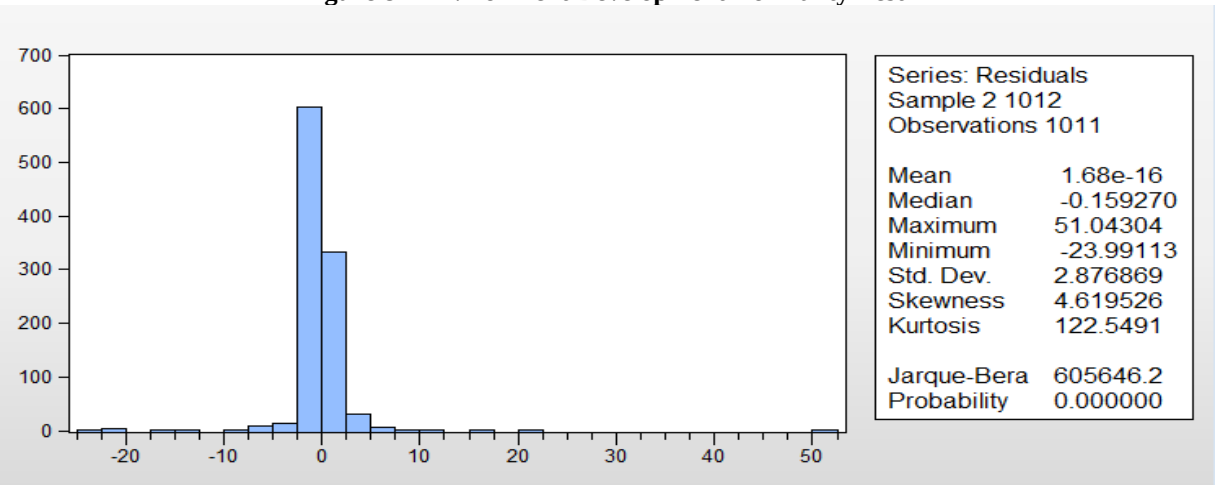


Figure 8 shows the normality test of Environment Development of 46 Asian countries data estimation period 2001 to 2021. There is four way to test normality, Skewness 4.619526 and Kurtosis 122.5491 is higher value than 0.05 therefore, indicated residuals are normally distributed, on other hand, Jarque-Bara 605646.2 and their probability 0.00 indicated residual are normally distributed and similar histogram climb shape also indicated residuals are normally distributed. Therefore, conclude results of Figure 5 model 5 Environment development data is normally distributed and fitted for estimation.

Table 3 - Bound Test

Test Statistic-	Significance	I0-Bound	I1-Bound	Value.	k.
F-statistic (Eco-efficiency)				35.00904	6
F-statistic (SDGs)				10.13640	6
F-statistic (Social)				9.453628	6
F-statistic (Economic)				28.79958	6
F-statistic (Environment)				6.959555	6
Critical Value Bounds	10%	2.53	3.59		
	5%	2.87	4		
	1%	3.6	4.9		

Null Hypothesis: No long-run-relationships exist.

Table 3 shows the Bound test of 46 Asian Countries data period 2000 to 2021. Bound test used to estimate co-integration between the upper and lower bound values, if F statistic value is more than 10 % bound value then we say model is fitted and good results established and no long run relationship between model variables. If bound value is between upper and lower bound or low than we conclude model is not fitted and there is co-integration between variable exists. Eco-efficiency bound F statistic value 35.00904 above the upper bound value 3.59 and lower bound value 2.53 therefore indicated 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 – External Finance impact on eco-efficiency, SDGs, Social, Economic and Environment 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

Table 4 shows the external finance effect on eco-efficiency, SDGs, Social, Economic and Environment Development in 46 Asian countries period 2000 to 2021. The result of external finance indicator Foreign direct investment in Model 1 -0.00186 negative insignificant, Model 2 0.00414 positive insignificant, Model 3 6.90005 positive insignificant, Model 4 -0.00165 negative insignificant and Model 5 -0.00146 insignificant impact on eco-efficiency, SDG, Social, Economic and environment development respectively. Second external finance variable Remittances in Model 1 0.0288** positive moderator significant, Model 2 0.0248** positive moderator significant, Model 3 -0.00028 negative insignificant, Model 4 0.00402 positive insignificant and Model 5 -0.0231** positive moderating effect on eco-efficiency, SDG, Social, Economic and environment development respectively. Third external finance indicator ODA official development Assistance in Model 1 0.02253 positive insignificant, Model 2 -0.067*** 99 % negative significant, Model 3 -0.001*** positive 99% significant, Model 4 0.03866 positive insignificant and Model 5 -0.02151 negative insignificant impact on eco-efficiency, SDG, Social, Economic and environment development respectively. Fourth external finance indicator of debt in Model 1 -0.00010 negative insignificant, Model 2-0.0004** negative moderating significant, Model 3 -7.720*** negative 99% significant, Model 4 -0.00051 negative insignificant and Model 5 -0.00015 negative insignificant effect on eco-efficiency, SDG, Social, Economic and environment development respectively. Fifth external finance indicator is Trade in Model 1 0.00200 positive insignificant, Model 2 0.00122 positive insignificant, Model 3 7.270*** positive 99% significant, Model 4 0.0064** positive moderating significant and Model 5 0.00145 positive insignificant impact on eco-efficiency, SDG, Social, Economic and environment development respectively. Sixth external finance indicator is Restriction in Model 1 -0.00321 negative insignificant, Model 2 0.021*** positive 99% significant, Model 3 0.003**** positive 99 % significant, Model 4 -0.01011 negative insignificant and Model 5 0.00656 positive insignificant impact on eco-efficiency, SDG, Social, Economic and environment development respectively. Further constant Model 1 26.680***, Model 2 1067.1***, Model 3 1192.2***, Model 4 10.964*** and Model 5 1105.3**** 99% result and model stability showing. On other hand, Trend only Model 1 -0.0006** Moderating significant showing and other models' insignificant results product, mean trend of country is not significant and

need to change, improve financial policies. R-squared Model 1 0.210945, Model 2 0.894962, Model 3 0.904932, Model 4 0.098989 and Model 5 0.898220 also indicate the estimated models fit and sustainable. Durbin Watson values of all five model near to 2 and f-statistic significant value also indication of estimation sustainability. The conclude that sustainable development Goals Model 2 and Social Development Model 3 highly recommended external financial inflow and ODA, Debt and restriction strong indicator of external finance in Asian countries during 2000 to 2021, while other results differ.

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 5 shows the external finance relationships with eco-efficiency, SDGs, Social, Economic and Environment development in short run and long run 46 Asian countries period 2000 to 2021. The table 5 results of indicated foreign direct investment no significant relationship with all five model's eco-efficiency, SDG, Social, Economic and environment development respectively in short run as well long run. Remittance significant with Model 1, Model 2 and Model 5 in short run, on other hand long run significant with Model 1, Model 2 Model 3 and Model 5 long run effect on eco-efficiency, SDG, Social, Economic and environment development respectively. Official development Assistance is significant in Model 2 and Model 3 in short run as well as long run effect on eco-efficiency, SDG, Social, Economic and environment development respectively. Similarly, Debt is significant

also in Model 2 and Model 3 short run and long run effect on eco-efficiency, SDG, Social, Economic and environment development respectively. Other external finance indicator Trade is significant in Model 3 and Model 4 in short run, while long run significant in model 4 impact on eco-efficiency, SDG, Social, Economic and environment development respectively. Restriction significant in Model 2 and Model 3in short run as well as long run effect on eco-efficiency, SDG, Social, Economic and environment development respectively. The table 5 result indicated SDGs and Social Development Models are strongly affected with external finance as compare to other Models eco-efficiency, economic and environment and Official development, Debt and restriction more stronger indicator as compare to FDI, Remittances and Trade in Asian region countries during 2000 to 2021, while others differ.

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 6 shows the external finance impact on eco-efficiency in 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 eco-efficiency Coefficient have insignificant with all six external finance indicator in short and long run. In East Asian countries results indicated foreign debt and Restriction high significant with eco-efficiency in short and long run. In South Eastern Asia Remittance, Trade and Restriction highly significant with eco-efficiency in short, while remittance and Debt in long run. In Southern Asia only Remittances have moderating significant with eco-efficiency in short and long run. In Western Asia only trade have 90% significant relationship with eco-efficiency. Therefore, result concludes that East Asia and South Eastern Asia eco-efficiency have strong and important relationship with external finance in short and long run as compare to another Asian regions period 2000 to 2021.

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 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 high significant relationship with SDGs in short and long run. In South Eastern Asia all external finance indicator have strong significant relationship with SDGs in short run and long run. In Southern Asia FDI, Remittances and ODA in short run and FDI, ODA and Trade in long run significant relationship with SDGs. In Western Asia only restrictions have high significant impact on SDGs. The Figure 7 results concludes South Eastern Asia have 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 significant but less relationship with SDGs.

4 CONCLUSION, RECOMMENDATION AND POLICY IMPLICATION

This study's primary goals were to investigate the impact of foreign financing on the eco-efficiency, SDGs, social, economic, and environment 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 important 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 indicator on eco-

efficiency, SDGs, social-economic-environment development toward Nations stability and estimate through the Auto-regressive Distributed Lag (ARDL) Models. The following the valuable principal results gained from the longterm estimation:

I. Theoretically estimation stated the Remittances, ODA, foreign debt, and Restriction are helpful indicators in improving sustainable development goals, Social and economic development during short run and long run in Asian countries during 2000 to 2021.
II. Foreign direct investment failure and insignificant with all models during short run and long run in Asian countries during 2000 to 2021.
III. Sustainable development Goals Model 2 and Social Development Model 3 is more significant as compare to other three Models eco-efficiency, economic and environment development during short run as well long run in Asia during 2000 to 2021.
IV. South Eastern Asia and East Asia Region Countries have strong requirement of External finance as compare to other Asian regions and external finance was highly significant relationship with eco-efficiency and Sustainable Development Goals in short run and long run during 2000 to 2021.

According to the study's calculations above five Models, there are various policy consequences; Government need to promote remittance to achieve development of a country. Foreign debt have burden on nation but it fulfil the financial need and extend the development of nations. Restriction is a useful indicator to control finance and manage finance according requirements. Trade is important but not at cost of environment degradation, social and economic implication. Foreign direct investment is also useful indicate in investment enhancement if country manage properly. Countries need to promote financial indicator that enhances the financial need 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 toward World social, economic, environment and financial sustainability.

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