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The impact of economic globalization on income inequality in middle-income countries in Asia: An empirical analysis from 2018 to 2021

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Abstract: This study investigates the relationship between economic globalization and income inequality in Asia during the period from 2018 to 2021. The research aims to contribute to the academic and policy debates on the impact of globalization on income inequality and to identify effective policy measures that can help mitigate the negative effects of globalization on income distribution in Asian countries. In this study, the relationship between income inequality and economic globalization is analyzed using the Random Effects Model (REM) and Generalized Least Squares (GLS) estimation to address the issues of auto-correlated errors and heteroscedasticity in the selected model. The study utilizes secondary data from the World Bank about 28 middle-income countries in Asia, spanning the period from 2018 to 2021, the International Monetary Fund, and the United Nations Development Program. The results of the study indicate that economic globalization is positively correlated with income inequality. The findings of this study provide insights and recommendations that can help policymakers, academics, and other stakeholders better understand the complex relationship between economic globalization and income inequality and identify strategies for promoting more equitable economic growth and development in Asia.

Keywords: Economic globalization, income distribution, income inequality, middle-income countries, policy measures.

1. Introduction

In Asia, economic globalization has been a significant force since the 1990s, when many countries in the region opened their economies to trade and investment. This has led to increased economic growth and poverty reduction in some countries, such as China and Vietnam, but it has also resulted in rising income inequality in many others, such as India, Indonesia, and the Philippines.

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The debate on the relationship between economic globalization and income inequality has become increasingly relevant in recent years, as income inequality has risen in many countries, including in Asia. One way in which economic globalization can exacerbate income inequality is through trade liberalization. The removal of trade barriers can lead to increased competition and lower prices for consumers, which can be beneficial for consumers and specific industries. However, it can also lead to lower wages for workers in specific industries, particularly those that face competition from low-wage countries. This can exacerbate income inequality by widening the gap between high-skilled and low-skilled workers (Autor, 2014). Another way in which economic globalization can exacerbate income inequality is through outsourcing and offshoring. Economic globalization has made it easier for companies to outsource or relocate their operations to countries with lower labor costs, which can lead to job losses and wage stagnation in high-wage countries. This can also exacerbate income inequality by reducing opportunities for workers in certain industries and widening the gap between high-skilled and low-skilled workers (Milanovic, 2016). A third way in which economic globalization can exacerbate income inequality is through capital mobility. Economic globalization has made it easier for capital to move across borders, leading to increased economic financializing and a concentration of wealth among the top earners. This can exacerbate income inequality by widening the gap between the rich and the poor (Stiglitz, 2016).

Overall, the relationship between economic globalization and income inequality is complex and multifaceted, and the impact of globalization on income inequality may depend on a range of factors, including the specific policies and institutions in place in different countries. While economic globalization has the potential to both exacerbate and reduce income inequality, it is important for policymakers to consider the potential distributional impacts of globalization policies carefully and to take steps to mitigate negative effects on workers and vulnerable populations. Therefore, understanding the impact of economic globalization on income inequality is essential for policymakers, business leaders, and other stakeholders to develop strategies to promote inclusive and sustainable economic growth in middle-income countries in Asia. What is the relationship between economic globalization and income inequality in Asian countries during the period of 2018 to 2021? And how do various indicators of economic globalization affect income inequality in these countries?

This research analyzes the impact of economic globalization on income inequality in Asian countries from 2018 to 2021. The study covers various indicators of economic globalization. It also focuses on developing Asian countries, to provide a comprehensive analysis of the relationship between economic globalization and income inequality in the region. The research will also consider the different factors that may influence the impact of economic globalization on income inequality, such as differences in economic development, political systems, and institutional frameworks. The study will use a range of data sources and analytical tools to investigate the relationship between economic globalization and income inequality in Asia and identify policy implications for managing the potential negative impacts of globalization on income distribution. The results of this paper can provide insights and recommendations that can help policymakers, academics, and other stakeholders better understand the complex relationship between economic globalization and income inequality and identify strategies for promoting more equitable economic growth and development in Asia.

2. Data and methodology

2.1. The model and variables

In this study, the relationship between income inequality and economic globalization is analyzed using a random effect panel regression model with robust standard errors. The model is designed to control for all variables that are fixed over time in different countries. The robust standard errors technique is utilized to ensure unbiased standard errors of OLS coefficients under heteroscedasticity, thereby avoiding violations of the Gauss Markov assumptions. The independent variables are economic globalization, education, and inflation, while the

dependent variable is income inequality. Additionally, there are other control variables included in the model. The selection of variables for the model is based on Jaumotte et al. (2013) with some modifications to fit the specific research focus. The variables used are simplified and some require different data sources for calculation.

$$Ratio = \alpha + \beta_1 Topen_{i;t} + \beta_2 FOpen_{i;t} + \beta_3 FDI_{i;t} + \beta_4 Ecoglo_{i;t} + \beta_5 Infla_{i;t} + \beta_4 Lcorruption_{i;t} + \beta_5 Lgdp_{i;t} + \beta_6 Edu_{i;t-1} + \beta_7 Edu_{i;t}$$

- Topen is the variable for trade openness, measured by the sum of exports and imports of goods and services measured as a share of gross domestic product, provided by the World Bank database.

- FOpen is the financial openness variable, and the Chinn – Ito index representing this variable (Chinn-Ito index, introduced by Chinn, Menzie & Ito, 2006), is an index measuring a country's degree of capital account openness. This index is based on the binary dummy variables that codify the tabulation of restriction on cross-border financial transactions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions).

- FDI is the variable of foreign direct investment net inflows (% of GDP). It represents the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise. The data is collected directly from the International Monetary Fund, International Financial Statistics and Balance of Payments databases, World Bank, International Debt Statistics, and World Bank and OECD GDP estimates.

- Ecoglo is the abbreviation for "The KOF Globalisation Index". This variable is used to measure the rate of globalization in countries around the world. The index is based on three dimensions, or core sets of indicators: economic, social, and political. Through these three dimensions, the overall index of globalization attempts to assess current economic flows, economic restrictions, data information flows, data on personal contact, and data on cultural proximity within surveyed countries. The data for this variable is provided by The KOF Swiss Economic Institute.

- Infla is an inflation variable. It as measured by the consumer price index and reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. The data source is provided by the International Monetary Fund, International Financial Statistics, and data files.

- The corruption variable is measured by the Corruption Perceptions Index, provided by Transparency International. The Corruption Perception Index (CPI) ranks countries by their perceived levels of public sector corruption, as determined by expert assessments and opinion surveys. The CPI ranks 180 countries and territories around the world, scoring on a scale of 0 (highly corrupt) to 100 (very clean).

- Edu is school enrollment, secondary (gross), and gender parity index (GPI). The gender parity index is the gross enrollment ratio of girls to boys enrolled in public and private schools. It is provided by the UNESCO Institute for Statistics (UIS) (UNESCO, 2022).

- GDP (Gross Domestic Product) is the variable of GDP. GDP at constant prices (real GDP) refers to the volume level of GDP. Constant price estimates of GDP are obtained by expressing values in terms of a base period. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single-year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. The data is provided by the World Bank national accounts data and OECD National Accounts data files.

2.2. Data sources

The present study provides an analysis of 28 middle-income countries in Asia, spanning the period from 2018 to 2021. These countries include a diverse range of nations, such as Armenia, Azerbaijan, Bangladesh, Bhutan, Cambodia, China, Egypt, India, Indonesia, Iran, Iraq, Jordan, Kazakhstan, Kyrgyz Republic, Laos, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Tajikistan, Thailand, Timor-Leste, Turkmenistan, Uzbekistan, and Vietnam. To measure income inequality, the study utilizes the Palma ratio, which is a ratio of the share of all income received by the top 10% of people with the

highest disposable income to the share of all income received by the bottom 40% of people with the lowest disposable income. The data for the Palma ratio is collected from the United Nations Development Programmer's data published in 2022, while the data on economic globalization measures are sourced from the International Monetary Fund's (IMF) global measurements. With this comprehensive and diverse dataset, the study aims to provide a more nuanced understanding of the impact of economic globalization on income inequality in middle-income countries in Asia.

The article uses a synthesis-analytic method; the author has synthesized previous research models, then performed analysis and selected a suitable model for the data and scope of the study. Furthermore, the author employed the method of secondary data collection. The author gathered and synthesized secondary data from reputable international organizations' surveys such as the World Bank, the International Monetary Fund, and the United Nations Development Program. Then, the author aggregated and analyzed the data that were appropriate for the research scope and objectives. The author also used descriptive statistical methods to get an overview of the data provided in the article and qualitative methods to analyze the influence of factors such as trade and financial openness, foreign investment, inflation, GDP, education, and corruption on income inequality in middle-income countries in Asia from 2018 to 2021. The authors use some other methods to measure the variables, specifically as follows:

2.3. The method of measuring income inequality

The use of the Palma ratio as a measure of income inequality is widely accepted in economic research. It provides a useful tool to capture the level of income concentration at the top of the distribution and the relative deprivation of the bottom segment of the population. The Palma ratio is preferred over other measures, such as the Gini coefficient, as it is less sensitive to changes in the middle of the distribution and provides a clearer interpretation to non-technical audiences. The Palma ratio is particularly useful in developing countries, where income data are often unreliable or incomplete. Furthermore, the use of the United Nations Development Programmer's (UNDP) data and the Economic Co-operation and Development's (OECD) data, which are both highly regarded sources of global development statistics, adds to the robustness and reliability of the study's findings. The data from these sources allowed the authors to conduct a comprehensive analysis of income inequality in a diverse range of countries in different regions, including both high-income and low-income countries. The study's use of multiple sources and a widely accepted measure of income inequality enhances the reliability and validity of the study's results.

2.4. The method of measuring economic globalization

To measure globalization, two distinct variables are utilized, which include trade openness and financial openness. These variables enable researchers to separate the impact of open trade and capital movements that come with globalization. Trade openness is determined by the proportion of total imports and exports in a country's GDP. A higher percentage indicates a more open economy in terms of global trade. Financial openness is measured using the Chinn-Ito index, which employs a set of binary dummy variables based on the International Monetary Fund's (IMF) limitations on cross-border financial transactions reported in their Annual Report on Exchange Arrangements and Exchange Restrictions. The index was first introduced by Chinn, Menzie & Ito (2006).

3. Results and discussion

3.1. Descriptive research results

The authors have divided 28 middle-income countries in Asia (within the study area) into 5 regions: Southeast Asia (including Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand, Timor-Leste, Vietnam), South Asia (including Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka), East Asia (including China, Mongolia), Central Asia (including Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan), and

West Asia (including Iran, Iraq, Jordan, Egypt, Azerbaijan, Armenia).

Figure 1 illustrates the average growth rate of trade (total exports and imports in total GDP) of 28 countries within the scope of the study, divided into 5 regions in Asia from 2018 to 2021. There is a strong correlation between trade and income, trade and inequality in the cross section of countries. Countries with higher trade openness tend to have higher living standards and lower income inequality while the opposite is true for countries with lower trade openness.

Overall, Southeast Asia and Central Asia are on an upward trend, while East Asia, West Asia, and South Asia are on a downward trend.

The Southeast Asian region had the highest trade growth rate, consistently leading with over 90% of GDP during the study period from 2018 to 2021, reaching 97.9%, 95.33%, 90.93%, and 99.8%, respectively. Following was the East Asian region, which only included China and Mongolia in the study, the two largest countries in Asia, but both were heavily impacted by the COVID-19 pandemic.

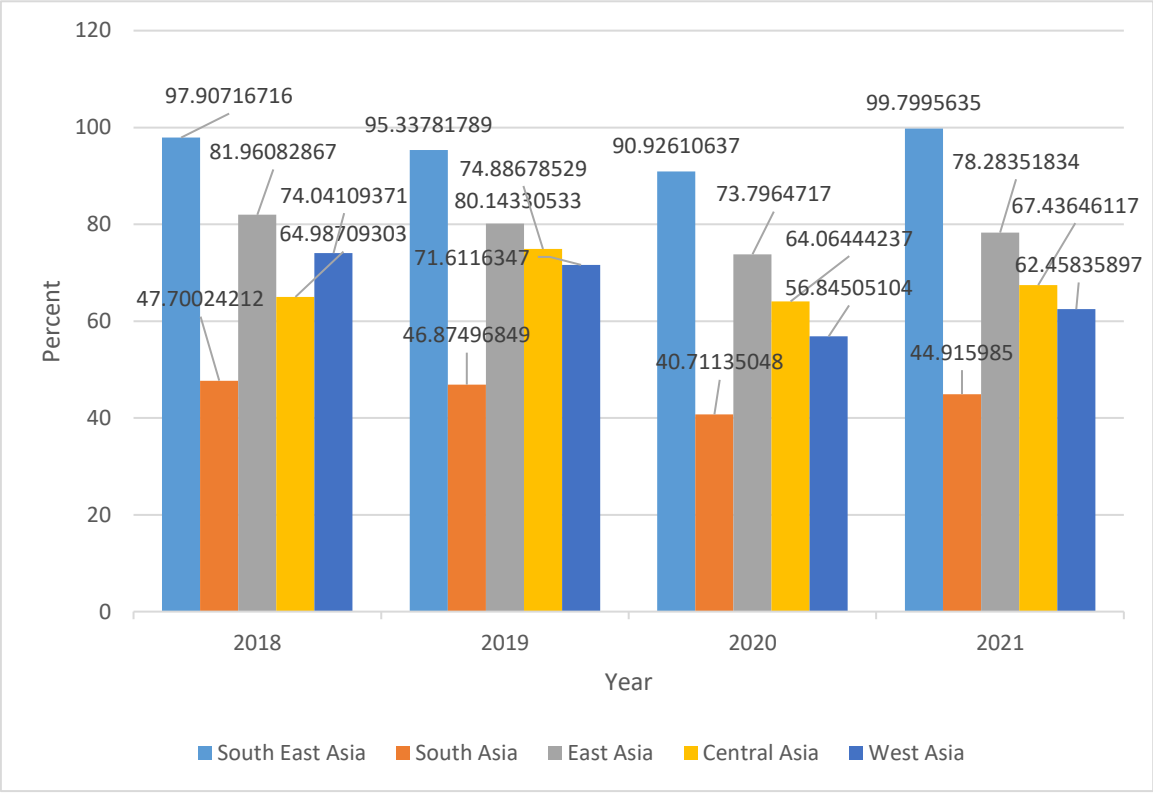

Figure 1: The average growth rate of trade of 28 countries within the scope of the study divided into 5 Asian regions from 2018 to 2021.
Source: The authors' compilation.

On the other hand, the West Asia and Central Asia regions experienced significant fluctuations. Specifically, the West Asia region had a trade rate of 74.04% in 2018 and hit a bottom during this period in 2020 at 56.85%.

In the Central Asia region, Kyrgyzstan is the leading country in terms of trade ratio with 98.98%, 99.37%, 83.47%, and 108.39%, respectively.

West Asia witnessed a decline in the trade ratio during the period of 2018-2021. The main reason is explained by political instability. This region has faced many political issues, including the conflict between Iran and the US, and the political crises in Lebanon, Iraq, and Syria. Second is the decline in oil prices: West Asia heavily relies on the oil and gas industry, therefore, the decrease in oil prices may have affected the economy of the region (Soliman, 2022).

The effect of foreign direct investment (FDI) has been one of the most widely debated issues

among economists and policymakers in developed and developing countries in recent years. The debate has been greatly reinforced because of the rapid increase in FDI flowing to least developed countries. Figure 2 illustrates the average FDI growth rate of the 5 regions. It is clear that no middle-income country in Asia is in the North Asia region. In general, during this period, the average FDI growth rate of the 5 regions tended to decrease, except Central Asia.

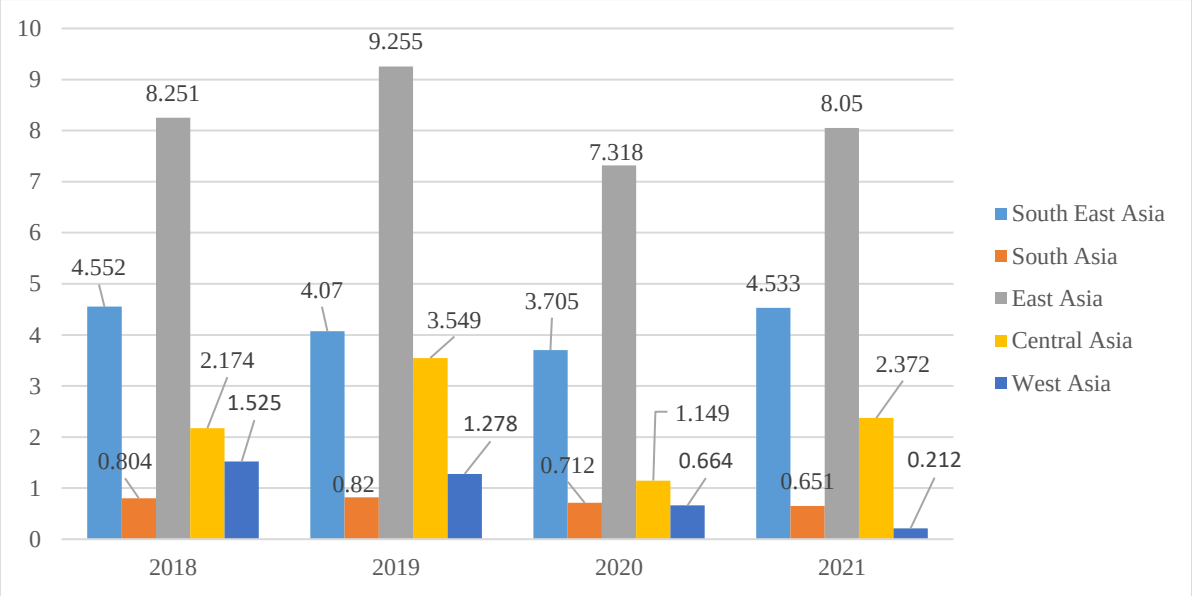

Figure 2: The average FDI growth rate during the period from 2018 to 2021 of 28 countries in the studied region divided into 5 regions of Asia
Source: The authors' compilation.

Central Asia had a growth rate of 2.174 percent in 2018, increasing to 2.372 percent in 2021. However, during this period, the region also experienced significant fluctuations, reaching a peak in 2019 at 3.549 percent and hitting a low point in 2020 at 1.149 percent. The opposite of Central Asia's fluctuations is the West Asia region which experienced a downward trend throughout the study period. To explain this issue, the author believes that many countries in the West Asia region have been facing political instability, conflict, and civil unrest, which have created an uncertain business environment and discouraged foreign investment.

Furthermore, in line with the trend of West Asia, the South Asia region also experienced a decrease when it decreased from 0.804 in 2018 to 0.651 in 2021. There could be several reasons why South Asia experienced a decrease in the average FDI growth rate from 2018 to 2021. One possible reason could be the political instability and security issues in some of the countries in the region, which could deter foreign investors from investing. Another reason could be the economic slowdown and structural issues in some of the countries, which could make the investment environment less attractive. Additionally, the COVID-19 pandemic and the resulting economic downturn could also have contributed to the decrease in FDI in the region.

On the contrary, East Asia experienced the highest FDI inflows. Although there were fluctuations during this period, East Asia remained the most attractive region for FDI, reaching a peak of 9.255 percent in 2019.

Ranked next is Southeast Asia, reaching 4.533 percent in 2021, just behind East Asia (with 8.05 percent). According to the author, Southeast Asia has a large and growing population, providing abundant and inexpensive labor for investors. In addition, government policies attract investment from countries in the region, including tax reductions and improvements in the business environment. Finally, this is a strategically located region that helps investors access different markets around the world.

Table 1: The table shows the Palma index of 28 middle- income countries in Asia from 2018 to 2021

Countries	Bottom 40% income share				Top 10% income share				Income share Ratio			
	2018	2019	2020	2021	2018	2019	2020	2021	2018	2019	2020	2021
Armenia	10.63	11.8	11.8	11.8	44.76	40.62	40.62	40.62	0.24	0.29	0.29	0.29
Azerbaijan	13.31	13.31	13.31	13.31	39.07	39.07	39.07	39.07	0.34	0.34	0.34	0.34
Bangladesh	10.84	10.84	10.84	10.84	42.85	42.85	42.85	42.85	0.25	0.25	0.25	0.15
Bhutan	9.23	9.23	9.23	9.23	42.59	42.59	42.59	42.59	0.22	0.22	0.22	0.22
Cambodia	8.17	8.17	8.17	8.17	46.5	46.5	46.5	46.5	0.18	0.18	0.18	0.18
China	8.52	8.52	8.52	8.52	41.66	41.66	41.66	41.66	0.2	0.2	0.2	0.2
Egypt	9.35	9.35	9.35	9.35	49.94	49.94	49.94	49.94	0.19	0.19	0.19	0.19
India	8.42	8.42	8.42	8.42	57.13	57.13	57.13	57.13	0.15	0.15	0.15	0.15
Indonesia	7.46	7.46	7.46	7.46	48	48	48	48	0.16	0.16	0.16	0.16
Iran	8.4	8.4	8.4	8.4	52.71	52.71	52.71	52.71	0.159	0.159	0.159	0.159
Iraq	7.81	7.81	7.81	7.81	52.23	52.23	52.23	52.23	0.15	0.15	0.15	0.15
Jordan	8.82	8.82	8.82	8.82	49.57	49.57	49.57	49.57	0.17	0.178	0.178	0.178
Kazakhstan	10.33	10.33	10.33	10.33	42.53	42.53	42.53	42.53	0.24	0.24	0.24	0.24
Kyrgyz	11.38	10.7	10.7	10.7	40.7	44.15	44.15	44.15	0.28	0.24	0.24	0.24
Laos	7.85	7.85	7.85	7.85	49.44	49.44	49.44	49.44	0.16	0.16	0.16	0.16
Malaysia	10.84	10.84	10.84	10.84	40.27	40.27	40.27	40.27	0.26	0.269	0.269	0.269
Mongolia	8.93	9.16	9.16	9.16	44.68	44.17	44.17	44.17	0.2	0.21	0.21	0.21
Myanmar	9.97	9.97	9.97	9.97	44.07	44.07	44.07	44.07	0.23	0.23	0.23	0.23
Nepal	10.43	10.43	10.43	10.43	41.92	41.92	41.92	41.92	0.25	0.25	0.25	0.25
Pakistan	11.04	11.04	11.04	11.04	43.26	43.26	43.26	43.26	0.26	0.26	0.26	0.26
Philippines	8.85	8.85	8.85	8.85	46.08	46.08	46.08	46.08	0.19	0.19	0.19	0.19
Sri Lanka	8.83	8.83	8.83	8.83	49.43	49.43	49.43	49.43	0.18	0.18	0.18	0.18
Tajikistan	9.51	9.51	9.51	9.51	43.21	43.21	43.21	43.21	0.22	0.22	0.22	0.22
Thailand	8.2	8.57	8.57	8.57	49.49	48.79	48.79	48.79	0.17	0.18	0.18	0.18
Timor-Leste	10.55	10.55	10.55	10.55	42.32	42.32	42.32	42.32	0.25	0.249	0.25	0.25
Turkmenistan	7.24	7.24	7.24	7.24	49.88	49.88	49.88	49.88	0.15	0.15	0.15	0.15
Uzbekistan	9.04	9.04	9.04	9.04	46.26	46.26	46.26	46.26	0.2	0.2	0.2	0.2
Vietnam	8.9	8.9	8.9	8.9	44.88	44.88	44.88	44.88	0.2	0.2	0.2	0.2

Source: UNDP (2023).

In Table 1, the Palma index represents the proportion of total income received by 10% of the people with the highest disposable income divided by the share of all income received by the 40% of people with the lowest disposable income. In 2018, Azerbaijan, Kyrgyzstan, Malaysia, Pakistan, Bangladesh, Timor-Leste, and Nepal were the 7 countries with the highest Palma ratio, with values of 0.34%, 0.28%, 0.26% (Malaysia and Pakistan with the same ratio), and 0.25% (Bangladesh, Timor-Leste, and Nepal with the same ratio). This means that income inequality was highest in these 7 out of 28 countries studied. During the study period, Bangladesh and Kyrgyzstan are two countries whose Palma ratio has tended to decrease. Specifically, in 2019, Bangladesh's Palma ratio decreased from 0.25 in 2018 to 0.15 and remained the same until 2021, and Kyrgyzstan's Palma ratio also had a similar trend, decreasing from 0.28 in 2018 to 0.24 in 2019 and remaining the same until 2021. According to a report by Oxfam, Bangladesh and Kyrgyzstan are among the countries that have seen a decrease in their Palma ratio between 2018 and 2021. The report suggests that this may be due to an increase in social spending and progressive taxation policies. Meanwhile, the remaining countries among the 7 countries mentioned above, such as Azerbaijan, Malaysia, Nepal, Pakistan, and Timor-Leste still maintain their Palma ratios.

On the contrary, Armenia is the only country that has seen an increase in the Palma ratio among the 28 countries studied. The country's Palma ratio was 0.24 in 2018, increased to 0.05 and reached 0.29 in 2021. This ratio helped the country rank second after Azerbaijan. On the other hand, the three countries with the lowest Palma ratio throughout the study period, remaining unchanged, were India, Iraq, and Turkmenistan with the same ratio of 0.15.

3.2. Model validation

To check the correlation level of the independent variables in the research model, the author used the command "corr" on the STATA software. The results show that the coefficients in the research model are less than 0.8, indicating that there is no correlation between the independent variables or in other words, the independent variables are linearly independent and appropriate for the research model (Table 2).

Table 2: Multicollinearity test result

```
. cor palma topen fopen fdi ecoglo infla Lcorruption Lgdp edu1
(obs=112)
```

	palma	topen	fopen	fdi	ecoglo	infla	Lcorru~n	Lgdp	edu1
palma	1.0000								
topen	0.1072	1.0000							
fopen	0.0896	0.4958	1.0000						
fdi	-0.1259	0.5171	0.5156	1.0000					
ecoglo	0.1757	0.3278	0.5357	0.1055	1.0000				
infla	-0.1739	-0.2620	-0.3576	-0.0805	-0.2157	1.0000			
Lcorruption	0.1934	0.1251	0.1578	-0.1474	0.4044	-0.2964	1.0000		
Lgdp	-0.3039	-0.3011	-0.1913	-0.2213	0.4062	0.0432	0.0283	1.0000	
edu1	0.1382	0.1167	0.0689	-0.0222	0.2371	-0.1615	0.4301	0.0744	1.0000

Source: Authors' calculation.

Table 3: Test of Hausman to select between REM and FEM models

	Coefficients (b) fem	(B) rem	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
topen	-.0000231	-.0001063	.0000831	.000126
fopen	.0018412	-.001816	.0036572	.0041896
fdi	-.0000439	-.0005174	.0004735	.0004022
ecoglo	-.0000438	.0015088	-.0015526	.0016008
infla	-.0001762	-.0002446	.0000684	.000153
Lcorruption	.0038459	.0081615	-.0043156	.0164727
Lgdp	-.0070637	-.0106384	.0035748	.0089169
edu1	-.0107564	-.0067799	-.0039765	.0182522

```
                b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test:  Ho:  difference in coefficients not systematic

              chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =        3.57
            Prob>chi2 =      0.8933
```

Source: Authors' calculation.

The author used the REM to estimate the causal effect, followed by a model selection test between the REM and the FEM. The results showed that Prob>chi2 = 0.8933 > α = 0.05, accepting the null hypothesis and concluding that the selected model in the study is the REM (with hypothesis H0: REM model, H1: FEM model). The result is shown in Table 3.

The OLS estimation for the REM will provide unbiased parameter estimates but they will not be efficient. This is because the OLS estimation ignores the autocorrelation in the error term μit. To obtain unbiased and efficient estimates, we can use the GLS estimation to account for the correlated and heteroskedastic error terms in the selected model, which was determined by the Hausman test as the REM model. This method can effectively address the issues of correlated and varying error terms in the model. The author also tested the heteroskedasticity of the model by OLS, and the result shows that the model has no heteroskedasticity because the Prob > chi2 = 0.1186 > 0.05. The results are presented in Table 4:

Table 4: OLS random effect regression result

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of palma

         chi2(1)      =     2.44
         Prob > chi2  =   0.1186
```

Source: Authors' calculation.

Table 5: Random Effects Model

```
Cross-sectional time-series FGLS regression

Coefficients:  generalized least squares
Panels:        heteroskedastic
Correlation:   common AR(1) coefficient for all panels  (0.8114)

Estimated covariances      =        28          Number of obs     =       112
Estimated autocorrelations =         1          Number of groups  =        28
Estimated coefficients     =         9          Time periods      =         4
                                                Wald chi2(8)      =     74.84
                                                Prob > chi2       =    0.0000
```

palma	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
topen	.0000291	.0000432	0.67	0.500	-.0000555	.0001138
fopen	-.0105329	.0026763	-3.94	0.000	-.0157784	-.0052874
fdi	-.0007063	.0005159	-1.37	0.171	-.0017174	.0003048
ecoglo	.0020011	.0003625	5.52	0.000	.0012906	.0027116
infla	-.0001541	.0002665	-0.58	0.563	-.0006765	.0003682
Lcorruption	.0078525	.0061661	1.27	0.203	-.004233	.0199379
Lgdp	-.0111495	.0016392	-6.80	0.000	-.0143624	-.0079367
edu1	.0102294	.0179241	0.57	0.568	-.0249012	.0453601
_cons	.0960048	.0287309	3.34	0.001	.0396932	.1523164

Source: Authors' calculation.

3.3. Quantitative research results

This research uses STATA to run the random effect panel data model with 95 percent confidence interval. Results in Table 5 illustrate some interesting findings as below.

On one hand, financial openness (Fopen), the KOF globalization index (Ecoglo), and GDP (Lgdp) are found to have significant values and influence directly income inequality in middle-income Asian countries during the period from 2018 to 2021 - in which, GDP (Lgdp) has a negative impact and is the factor that has the greatest impact on income inequality with a regression coefficient of -0.0111495. The second most influential factor is Fopen with a regression coefficient of -0.0105329. It suggests that there is a direct association between income inequality and financial openness. Besides, Ecoglo (regression coefficient = 0.0020011) has a positive influence on income inequality. This outcome is consistent with the findings by Iqbal & Naeem (2019), Phan & Nguyen (2019); and Belguidoum & Hassen (2020). The above findings show that increased financial openness can reduce income inequality by bringing resources to the economy and helping it develop. With stable financial markets and good institutional support, financial openness can increase investment, promote economic growth, and create job opportunities for lower-income individuals. Financial openness can also bring new technologies, managerial expertise, and access to global markets, which can help local firms compete and grow, leading to higher wages and more job opportunities for workers. As a result, increased financial openness can contribute to reducing income inequality by promoting economic development and providing opportunities for those who may have been left behind in a less globalized economy. This is agreed upon by Darrat and Sarkar (2009).

Moreover, increased GDP can reduce income inequality because it can erode the real value of debt, thereby reducing the burden on debtors, who are typically lower-income

individuals. Besides, it can increase the demand for labor and put upward pressure on wages, benefiting low-skilled workers. This has also been found and explained through studies by Milanovic (2016), Kapsos and Newson (2006), Atif et al. (2012).

On the other hand, there is no positive influence of Topen, Fdi, Infla, Lcorruption and Edul on income inequality in middle-income Asian countries during the period from 2018 to 2021 because p-values of Topen, FDI, Infla, Lcorruption, and Edul > 0.05, do not have significant values. First, Trade Openness has influenced income inequality negatively as in the opinion of Al-ramahi and Abu (2020). The reason is that the process of trade liberalization causes competition increase and job losses. Second, it can be seen that Inflation, FDI and inequality income has an inverse relationship in middle-income countries in Asia. This means a country that suffers from an increased inflation rate will also suffers from an increase in the rate of inequality income. This finding is consistent with results by Gros and Shamsfakhr (2023); and Le and Tran (2020). This is because inflation affects the value of assets, lending and investing decisions, number of transactions, activities of enterprises, especially on people who have low income. This leads to the fact that the inequality income rate will rise up. Third, corruption causes a decrease in the belief of investors and citizens that leads to an increase in inequality in income. Last, lower education is one of the reasons of inequality income as in Autor's opinion (Autor, 2014). In the technology era, workers who lack skill and education will lose their jobs and become poor. The opposite is true for those who are skilled and educated.

4. Conclusion and implication

The research paper has measured the impact of economic globalization on income inequality in middle-income countries in Asia during the period from 2018 to 2021. The study employed the REM and used GLS estimation to address the issues of auto correlated errors and heteroscedasticity in the selected model, as confirmed by the Hausman test.

The results of the study indicate that economic globalization is positively correlated with income inequality. This is also true for the factors of financial openness, the KOF globalization index, and GDP. In contrast, FDI, inflation, education and trade do not impact income inequality.

The recommendation for governments to focus on encouraging financial inclusion can be an effective way to address income inequality in middle-income countries in Asia. Financial inclusion can provide greater access to financial services for individuals and small businesses who may not have had access before, which can promote economic participation and help reduce income inequality. By providing access to credit, savings, and insurance services, individuals and small businesses can better manage their finances and invest in their own economic growth. This can help reduce the wealth gap and create more opportunities for those who may have been previously excluded from financial services.

Governments can play a key role in promoting financial inclusion by implementing policies that provide access to financial services for all citizens. This may include establishing financial literacy programs, expanding banking infrastructure, and offering incentives for financial institutions to provide services to low-income and underserved populations. Overall, promoting financial inclusion can be an effective way to reduce income inequality in middle-income countries in Asia, as it can help provide greater economic opportunities and access to financial services for all citizens.

Because of data limitations and challenges in examining diverse country characteristics, the model was unable to fully investigate the impact of economic globalization on income inequality. Future research could add more control variables to analyze the effect of economic globalization on income inequality or focus on some or one country with a specific characteristic.

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