



## **Trade Liberalization, Education, Inflation, FDI, and Urbanization: Implications for Income Inequality in the Developing World**

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### **ABSTRACT**

The purpose of the present study is to analyze the influence of Trade openness, Expenditure in education, inflation, FDI, Household consumption expenditure, and urbanization on Income Inequality of some selected developing countries from 2006 to 2022. After collecting panel data of some selected developing economies from World Development Indicators, Im, Pesaran & Shin (IPS) – panel unit root test has been applied to check stationary levels of variables. Then, the panel ARDL technique was applied to the selected data after confirming the mixed order of integration (using IPS) of selected variables and the findings suggest that Income Inequality is significantly increased by Urbanization, Trade Openness, Inflation, and household consumption Expenditure while Expenditure in Education and Capital Formation significantly reduce Income Inequality in developing countries.



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## **1. Introduction**

Inequality of income in emerging countries is not only a problem from an economic standpoint; it also has far-reaching implications for social, political, and economic development. Policies that encourage fair access to education, healthcare, economic opportunities, and social safety nets should be a component of any effort to reduce income inequality. These policies should be a part of any effort to address income inequality. A wide variety of factors, including

urbanization, inflation, household consumption, trade, foreign direct investment (FDI), education, and investment, have been investigated to determine the extent to which they may have a role in determining the distribution of income. Although prior research has helped us gain a better grasp of the influence that each of these individual elements has on income inequality, the academic literature is strikingly missing in an in-depth investigation of their combined impact and the interrelationships between them. By investigating how each of these elements contributes, individually and collectively, to income disparity, this investigation intends to fill an important vacuum in the existing research.

Zheng, Wan, and Huang (2023) investigate the impact of monetary policy on innovation and income inequality. According to the findings of the study, inflation unquestionably has a negative influence on economic development and innovation, whereas its effect on income disparity may be positive, negative, or even U-shaped. Using several different methodologies, Shabnum and Malik (2023) arrive at an estimate of the degree to which income inequality exists in Pakistan. A logit model is applied to data spanning the years 1980 through 2020 to determine how the degree of income inequality is affected by macroeconomic factors such as inflation, unemployment, and the rate of GDP growth. According to the Gini Index, the level of income disparity in Pakistan's urban areas is significantly higher than that seen in the country's rural parts. The research contributes to the formulation of specific policies that aim to reduce income disparity.

The purpose of Muszynska and Wedrowska (2023) study is to broaden and modernize the understanding of the factors that contribute to the inequality of household income in European nations. According to the findings, the degree of education has a considerable influence on the economic disparities that exist between households, although the exact nature of this influence varies from nation to nation. The survey also found that there was a correlation between the proportion of people who had the lowest level of education and the degree of economic disparity across different groups. In addition to this, the findings of the study reveal that the majority of nations that have a large percentage of people with high levels of education also have low levels of inequality at the very bottom of the distribution. Berisha, Sewak Dubey, and Gharehgozli (2023) suggest that the distributional repercussions of unexpected inflation have a very limited time horizon.

Using the interactive model, Yuldashev et al. (2023) sought to study the individual as well as the interactive influence that economic growth, human capital, and foreign direct investment have on income inequality. In addition, an approach known as the Augmented Mean Group (AMG) was utilized in the research project to achieve correct outcomes in estimating. The findings demonstrate that FDI contributes to an increase in inequality in some ways. However, the impact of FDI is enhanced when human capital is already present in the target economy. Dorn, Fuest, and Potrafke (2022) investigate the period of 1970–2014 for 139 different nations and conclude that economic openness appears to have a significant impact on inequality in China and transition nations.

The research conducted by Moradzadeh, Shirmehenji, and Nourahmadi (2022) investigates the effect that inflation has on the level of income disparity in 66 developing countries, including Iran, between the years 1995 and 2018. There is a nonlinear association that looks like a U-shaped curve between overall inflation and income disparity. The results of the model indicate that there is a U-shaped, nonlinear association between planned inflation and income inequality; however, there is no significant relationship between unanticipated inflation and income inequality. This is about the relationship between the components of inflation and income disparity. The findings also indicate that a higher GDP per capita and a higher urbanization rate both work to reduce income inequality, and that further progress in these areas will further reduce income inequality. On the other hand, the findings indicate that an increase in the freedom of international commerce in the nations that were investigated works to increase income disparity.

Using data from both the macro and the business level, Ashenafi and Dong (2023) investigate using a panel data fixed effect regression and a two-stage least square (2SLS) analysis. The conclusion that can be drawn from the analysis of data collected at the macro level is that the influence of trade on income disparity is unfavorable, even though the expansion of the financial sector increases income inequality. This is the case although the data were merged. The demonstration demonstrates that the correlation discussed in the paper has a causal relationship. This presents a challenge to the existing body of literature, which does not provide sufficient evidence unique to firms.

Tolulope (2021), utilizing the Dynamic Stochastic General Equilibrium method, explores the question of whether or not the effects of unforeseen and anticipated monetary policy shocks on income inequality in Nigeria are distinct from one another. According to the findings, shocks that were predicted as well as those that were not anticipated have the same influence on income disparity in Nigeria. It is possible to conclude that both shocks contributed to a reduction in the income gap that existed in the country. According to the findings of the study, the authorities in charge of monetary policy should ensure that all parties involved in the economy are kept informed of their decision to narrow the income disparity that exists in the nation. The purpose of Swamy (2021) study is to investigate the degree to which differences in income are caused by differences in household consumption. The findings give evidence that increasing disparity in consumption is causing increasing inequality in income. The tests of causality indicate the existence of a one-way causality extending from household spending to income disparity.

Ali, Attiaoui, Khalfaoui, and Tiwari (2021) explored between 1990 and 2014 and the findings are presented in the context of the Kuznets curve. Urbanization has no significant influence in lower and medium quantiles in upper-middle income countries (UMIC), but it does lead to a significant increase in inequality in higher quantiles. Industrialization has a positive influence on the distribution of income in HIC, while it has the opposite effect in UMIC, which is an increase in inequality. In all quantiles of lower-middle-income countries (also known as LMIC), the findings demonstrate that urbanization is associated with a decrease in inequality, whereas industrialization has no significant influence.

To investigate whether or not urbanization is linked to increased income inequality, Sulemana, Nketiah-Amponsah, Codjoe, and Andoh (2019) used an unbalanced panel dataset that covered 48 countries in Sub-Saharan Africa from 1996 to 2016 and spanned the time 1996–2016. The purpose of the research conducted by Shahabadi, Nemati, and Hosseinidoust (2018) is to evaluate the influence that income inequality has on many Islamic nations from 1990 to 2013. According to the findings, the rate of enrollment in elementary and secondary schools has a large impact in the opposite direction on income disparity, while the rate of enrollment in higher education has a substantial impact in the opposite direction on income inequality. The Kuznets Inverted-U hypothesis is validated as a result of the estimated coefficient of income being found to be positive and statistically significant, while the squared value of its finding is found to be statistically significant and negative. This study suggests that the distribution of income is more uneven in the early stages of economic growth and that this inequality steadily decreases until, finally, following the completion of economic growth and development, the distribution of income shifts towards equality.

A study conducted by Barusman and Barusman (2017) examines the relationship between openness to trade and the degree of wealth disparity that exists in the United States. This research examined data from a time series spanning the years 1970 to 2014 and concluded that increased global commerce contributes to greater income disparity. When the export side and import side of trade are broken down further, it is discovered that both of these aspects of trade considerably contribute to a larger GINI, which measures the degree to which income inequality has increased. However, the only side of the business that has contributed to the increase in the top 10%'s portion of the income is the import side. This study also concluded that the impact of foreign direct investment (FDI) on income inequality in the United States is virtually nonexistent.

Chen, Glasmeier, Zhang, and Shao (2016) looked at annual time series data from 1978 up until 2014 to determine China's urbanization rate and Gini index. The link between urbanization and income inequality is not unexpected; however, the fact that urbanization has a lagged worsening effect on the Gini index calls into question the widely held view that urbanization in post-reform China generally helps reduce income inequality. As China advances to the next phase of modernization, our findings imply that there is an immediate and pressing need to concentrate on the social aspect of urbanization.

Studies that already exist have made major contributions toward explaining how each of the aforementioned elements may influence income inequality on its own. On the other hand, there is a conspicuous lack of research that uses a single analytical framework to study the interplay and combined influence of urbanization, inflation, household consumption, trade, foreign direct investment (FDI), education, and investment on income disparity in a comprehensive manner. The existing body of research overlooks the possibility of synergistic or counteractive dynamics occurring as a result of the interaction of these components since it does not examine all of these factors together. Keeping in view the research gap, the present is conducted to explore the influence of trade openness, expenditure in education, inflation, FDI, household consumption expenditure, and urbanization on Income Inequality of some selected developing countries from 2006 to 2022. Moreover, the study is organized into four sections which 1<sup>st</sup> section briefly explains the importance and previous studies relevant to the topic, 2<sup>nd</sup> section reveals the data, model, and methodology, 3<sup>rd</sup> section presents the results and discusses in detail, 4<sup>th</sup> section concludes the whole paper while references are given in the last.

## 2. Data, Model and Methods

This study uses panel data from some selected developing countries i.e. Argentina, Armenia, Bolivia, Brazil, Bulgaria, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Indonesia, Kazakhstan, Kyrgyz Republic, Moldova, Paraguay, Peru, Russian Federation, Thailand, Turkey, and Ukraine ranging from 2006 to 2022. This data has been collected from World Development Indicators which is managed by World Bank Organization. An analysis is conducted using the Im, Pesaran & Shin W test (IPS) – Panel unit root test, and then the Panel ARDL technique is applied for long-run and short-run panel estimates. Based on the objective, the following model is proposed;

$$GINI = a_0 + a_1TR + a_2EX + a_3IN + a_4FD + a_5UR + a_6HX + a_7CF + u_i \tag{1}$$

**Table 1**  
**Data Description**

Variables	Description	Units of Measurement	Expected Relationships	Im, Pesaran & Shin W test (IPS at 5% level)
GINI	GINI Coefficient/ Income Inequality Index	Index	Dependent variable	I(0)
TR	Trade Openness	Index	Positive	I(1)
EX	Expenditure on Education	Dollars	Negative	I(1)
IN	Inflation rate	Percentage	Positive	I(0)
FD	Foreign Direct Investment	Dollars	Positive	I(0)
UR	Urbanization	Index	Positive	I(0)
HX	Households' Consumption Expenditure	Dollars	Positive	I(0)
CF	Capital Formation	Dollars	Negative	I(0)

In the above model, GINI is the GINI coefficient which is taken as a proxy of Income Inequality, TR is Trade Openness, EX is Expenditure on Education, IN is the Inflation rate, FD is Foreign Direct Investment, UR is urbanization, HX is Households' Consumption Expenditure, CF is Capital formation,  $a_i$ 's are the coefficients, while  $u_i$  is a stochastic error term. In this equation,

all the variables are taken in log form which represents the log-log form of the model. The details of these variables are given in Table 1.

Im, Pesaran & Shin W test (Unit root test) portrays Income Inequality (GINI), Inflation rate (IN), Foreign direct investment (FD), urbanization (UR), Households' consumption expenditure (HX) and Capital formation (CF) to be stationary at a level while Trade openness (TR) and Expenditure on education (EX) to be stationary at 1<sup>st</sup> difference. This leads the researcher to conduct analysis using the Panel ARDL technique for long-run coefficients.

### **3. Results and Discussion**

The results of Panel ARDL long run and short run are presented in Table 2. In this table, the coefficient of urbanization variables concludes a positive relationship between urbanization and Income inequality (Cho & Ramirez, 2016; Yuldashev et al., 2023). This effect may be due to the reason that the cost of living can go up as a result of urbanization, which can manifest itself in higher rents, overall property prices, and overall costs. Because of these increasing expenses, people and families with lower incomes may have a harder time affording basic requirements, which can have a disproportionately negative impact on them. In addition to this, urban locations typically have a bigger number of work opportunities available in a variety of fields. Jobs that demand a higher level of education and pay more money may require advanced knowledge and abilities, both of which those with lesser incomes may be lacking. This can result in a situation in which persons with higher incomes have access to jobs that pay better, while others with lower incomes are constrained to employment that pays less well and requires fewer skills.

Regarding trade openness, it is observed that income inequality is increased by trade openness in developing countries (Ashenafi & Dong, 2023; Dorn et al., 2022; Naanwaab, 2022; Nawab, Bhatti, & Nawaz, 2021). This is due to various reasons like the openness of a country's economy to international trade might cause modifications in its structure. Industries that are competitive on the world stage may experience growth, whereas those that face less competition may experience contraction. This can lead to a loss of jobs in traditional industries, which may affect individuals with lower levels of education and training because these workers are more likely to be employed in traditional sectors. At the same time, workers with greater levels of expertise may discover chances in the growing industries that are export-oriented. A more open trading environment may result in a higher level of company competitiveness. Because of the intense competition, businesses may come under pressure to reduce costs, especially labor costs. This can, in some instances, lead to pay compression, which is when earnings for workers with high and low levels of expertise become more comparable to one another while still being at overall lower levels. In many developing nations, there is a sizeable informal sector of the economy.

Inflation that is higher than average in developing nations can contribute to an increase in the income gap. Inflation is the general rise in the costs of goods and services. It can have a variety of effects on different income groups, leading to discrepancies in their purchasing power and overall economic well-being. Inflation can cause economic uncertainty, which can disproportionately affect individuals with lower incomes because these people are less suited to withstand financial shocks. It may be difficult for them to plan for the future and make investments in themselves, such as their education, their health, and their economic advancement. The present study is also supportive of the arguments given above and reveals the positive link between inflation and income inequality (Berisha et al., 2023; Bhatti, Chaudhry, & Bashir, 2021; Moradizadeh et al., 2022; Shabnum & Malik, 2023; Zheng et al., 2023).

In this study, a positive sign attached to FDI is found to have a significant effect on Income Inequality in developing countries (Cho & Ramirez, 2016; Yuldashev et al., 2023). This

may be justified as foreign direct investment has the potential to aggravate existing income disparities. There is a possibility that the benefits of FDI, such as the creation of new jobs, the expansion of economic activity, and the improvement of infrastructure, will not be dispersed evenly across the population. It is common practice for foreign investors and their local partners to appropriate a sizeable percentage of the earnings and benefits, which may result in a greater concentration of wealth among a smaller number of highly privileged individuals. Foreign direct investment can cause a segmentation of the labor market, which results in higher-skilled people in industries associated with FDI having access to greater job possibilities and earnings and lower-skilled workers being relegated to industries with fewer financial options.

It is expected that a household's consumption expenditure will raise income inequality due to the following reasons. How households distribute their expenditure across different categories of goods and services is one of the many factors that might contribute to income disparity. Households with a lower income have a greater propensity to devote a bigger amount of their income to fundamental requirements such as shelter, food, and medical care. On the other hand, households with higher incomes have more money available for spending on luxury items and services since they have more discretionary income. It is possible that households with lower incomes may be disproportionately affected and that the income gap will increase if the cost of necessities rises faster than income. The members of households with higher incomes typically have access to greater resources, which allows them to invest in better education and healthcare, providing them with an advantage in the labor market. The study also demonstrates the positive link between household consumption expenditure with income inequality in developing countries (Swamy, 2021).

**Table 2**  
***Income Inequality (Dependent Variable) Model***

<b>Variable</b>	<b>Coefficient</b>	<b>Standard Errors</b>	<b>t-Statistic</b>	<b>Probability</b>
<b>Long Run Equation</b>				
Urbanization	0.3839	0.0602	6.3682	0.0000
Trade Openness	0.1974	0.0179	11.0240	0.0000
Inflation	0.0441	0.0026	16.9666	0.0000
FDI	0.0386	0.0025	15.3861	0.0000
Households Consumption	0.3399	0.0481	7.0674	0.0000
Expenditure in Education	-0.2165	0.0198	-10.9331	0.0000
Capital Formation	-0.1679	0.0209	-8.0066	0.0000
<b>Short Run Equation</b>				
COINTEQ01	-0.3955	0.0979	-4.0364	0.0001
D(UR)	-0.4940	6.3009	-0.0784	0.9376
D(TR)	0.0229	0.0553	0.4148	0.6788
D(IN)	-0.0128	0.0026	-4.7957	0.0000
D(FD)	-0.0054	0.0079	-0.6805	0.4972
D(HX)	-0.1580	0.0875	-1.8046	0.0731
D(ED)	0.1241	0.0688	1.8023	0.0735
D(CF)	0.0458	0.0580	0.7892	0.4312
Constant	0.5092	0.1416	3.5948	0.0004

In this study, the coefficient attached to expenditure in education is negative and statistically significant as well (Muszynska & Wedrowska, 2023). There is some evidence that putting money into education can have a beneficial effect on efforts to reduce wealth disparity in developing countries. It is common knowledge that education is a primary factor in determining a person's social and economic mobility, and the impacts of education on the distribution of income are significant. Education provides people with the skills and knowledge that are necessary for improved employment prospects and a greater earning potential. Countries can enable individuals to access occupations with higher income and break the cycle of poverty by investing in education, particularly for populations that are at a disadvantage. People who have completed higher levels of school typically have greater financial success. The

general skill level of the workforce will improve as more people acquire education and training. This will result in higher average pay and may even contribute to a reduction in the wage gap that exists between workers with various skill levels.

Due to Capital formation, income inequality will reduce in developing nations as evidenced by negative signs associated with this variable, and probability value shows its significant effect. This is because capital formation refers to the accumulation of both physical and human capital. Increasing economic activity and the number of available jobs are two potential outcomes of financial investments in tangible capital, which include things like infrastructure, manufacturing facilities, and technological advancements. Increasing the number of job possibilities available can help absorb labor from sections of the population with lower incomes, which can help reduce both unemployment and underemployment. The incorporation of new technologies and the cultivation of new skill sets are frequently necessary steps in the process of capital formation. This could result in the establishment of jobs requiring greater levels of expertise and open doors to educational and employment opportunities for people who come from families with lesser incomes.

#### **4. Conclusion and Policy Recommendations**

The objective of the present study is to explore the influence of trade openness, expenditure in education, inflation, FDI, household consumption expenditure, and urbanization on Income Inequality. This study uses panel data from some selected developing countries i.e. Argentina, Armenia, Bolivia, Brazil, Bulgaria, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Indonesia, Kazakhstan, Kyrgyz Republic, Moldova, Paraguay, Peru, Russian Federation, Thailand, Turkey, and Ukraine ranging from 2006 to 2022. This data has been collected from World Development Indicators which is managed by World Bank Organization. An analysis is conducted using the Im, Pesaran & Shin W test (IPS) – Panel unit root test, and then the Panel ARDL technique is applied for long-run and short-run panel estimates.

The results of the Im, Pesaran & Shin W test show that Income Inequality (GINI), Inflation rate (IN), Foreign direct investment (FD), urbanization (UR), Households' consumption expenditure (HX) and Capital formation (CF) are stationary at a level while Trade openness (TR) and Expenditure on education (EX) are stationary at 1<sup>st</sup> difference. This leads the researcher to conduct analysis using the Panel ARDL technique for long-run coefficients. Panel ARDL results reveal that Income Inequality is significantly increased due to Urbanization, Trade Openness, Inflation rate, Foreign direct investment, and Household consumption expenditure While Expenditure in Education and Capital Formation may reduce Income inequality in some selected developing countries in the long run. Based on the above findings, it may be suggested that;

- Raise the amount of money that the government spends on education to guarantee that everyone has equal access to educational opportunities of a high standard.
- It is important to promote investment in economically disadvantaged regions, as this can lead to more balanced development and a reduction in the inequities that exist between regions.
- Encourage foreign direct investment by providing various incentives, such as tax exemptions, tariff reductions, and streamlined investment procedures.
- To narrow the gap that exists between urban and rural communities, it is necessary to expand access to reasonably priced housing, water and sanitation systems, medical care, and transportation options.

#### **Authors Contribution**

Furrukh Bashir: Initiated the core idea of performed data analysis and drafting.

Farzana Munir: Reviewed and revised overall quality and writeup of the manuscript

Hina Ali: Provided guidelines for empirical analysis

Syeda Neha Fatima: Provided guidance for data analysis, reviewed, supervised overall study

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