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Research Paper

The Effect of Foreign Direct Investment on Income Distribution in Developing Countries

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Abstract
Foreign direct investment (FDI) not only contributes to economic growth and development but also affects the way income is distributed in host countries, especially in developing countries. The objective of this research is to analyze the effect of FDI on income distribution in developing countries. The research adopted a fixed effects model, using panel data from fourteen developing countries for the period 2000-2020. The estimated model took into account the effect of the unemployment rate, government spending as a percent of GDP, and inflation rate, in addition to the FDI as a percent of GDP, to explain income distribution expressed as the share of the poorest 40% as a percent the share of the richest 20%. The empirical results showed that FDI exacerbates income distribution in developing countries, but its effect is very weak.

Key words:
FDI, Income Inequality, Fixed Effects Model.

ورقة بحثية

تأثير الاستثمار الأجنبي المباشر على توزيع الدخل في الدول النامية

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المستخلص

لا يساهم الاستثمار الأجنبي المباشر في النمو الاقتصادي والتنمية فحسب، بل يؤثر أيضًا على طريقة توزيع الدخل في البلدان المضيفة وخاصة في البلدان النامية. الهدف من هذا البحث هو تحليل تأثير الاستثمار الأجنبي المباشر على تفاوت توزيع الدخل في البلدان النامية. تبنى البحث نموذج التأثيرات الثابتة، باستخدام بيانات بانل لأربعة عشر دولة نامية للفترة ٢٠٠٠-٢٠٢٠. النموذج المقدر اخذ بالاعتبار تأثير كل من نسبة البطالة ونسبة الانفاق الحكومي من الناتج المحلي الإجمالي، ومعدل التضخم، بالإضافة الى نسبة الاستثمار الأجنبي المباشر من الناتج المحلي الإجمالي، كمتغيرات مفسرة لتفاوت توزيع الدخل المعبر عنه بنسبة حصة أفقر ٤٠% الى حصة اغنى ٢٠%. اظهرت النتائج التجريبية أن الاستثمار الأجنبي المباشر يفاقم تفاوت توزيع الدخل في البلدان النامية، ولكن تأثيره ضعيف جدا.

الكلمات الرئيسة

الاستثمار الأجنبي المباشر، عدم المساواة في الدخل، نموذج الأثر الثابت.

مجلة

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(TANRA): **مجلة علمية، فصلية، دولية، مفتوحة الوصول، محكمة.**

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1. Introduction:

FDI has been receiving increasing attention since the early 1990s as economists and policy makers view it as an engine of development in many countries. So, efforts are being made to attract it. However, FDI impact on income distribution is just as important as its developmental effects. These distributional effects are not included in the accounts of countries when they adopt policies to attract such investments. Since the economic development literature differs about the direction and importance of the effect of FDI on income distribution, there is an important challenge facing developing countries hosting FDI with regard to its impact on the way their income is distributed. If FDI increases income inequality, then its positive effects on economic growth will be offset by negative social and economic effects. This will be a major concern for developing countries that rely heavily on FDI in which social and political stability plays a major role in economic development.

The purpose of the research is to obtain new evidence about the effects of FDI on income distribution in a selected developing country.

The research hypothesis is: FDI exacerbates income inequality in developing countries. Because it is usually capital-intensive, thus reduces employment opportunities. In addition, FDI requires skilled labor that is scarce in these countries, then, widens the gap between the wages of skilled, and unskilled workers.

Panel data for 14 developing countries for the period 2000-2020 were collected from World Bank data - International Development Indicators. And adopt of the fixed effects method to conduct the analysis.

After introduction, section 2 will discuss the Theoretical Framework, section 3 analyzes the Relationship Between FDI and Income Distribution in Developing Countries, methodology and data will display in Section 4, Section 5 review estimation results, last section contain the conclusion and policy implications.

2. Theoretical Framework

Economists' vision in their perception of the nature of the impact of FDI on income distribution is divided into three groups. The first group finds negative relationship between FDI and income inequality. So, more FDI help to reduce income inequality, while the second group claims positive relationship between FDI and income inequality. So, more FDI contribute to increase income inequality; The third group considers a nonlinear relationship between FDI and income inequality. So, FDI effect varies with the level of economic development of the host countries.

- **FDI Reduce Income Inequality**

According to the neoclassical view, FDI enhances economic growth and reduces inequality in the host countries. This vision is based on the fact that FDI contributes to bridging the resource gap, and promotes growth and development through the dissemination of technology, human capital development, management skills, and access to export markets. The role of FDI in reducing income inequality is enhanced when capital is invested in a sector that uses low-

income unskilled labour. (Kaur R. et al, 2018, 130-131; Hemmer H., et al, 2005, 4; Farhan M., et al, 2014, 602)

The technological change that FDI brings is not necessarily biased in favor of skilled workers. There is an important sectoral bias in the type of FDI that is being attracted. FDI in some types of low-skill sectors (e.g., textiles and food processing) can disproportionately benefit unskilled workers. For this reason, FDI in manufacturing and labor-intensive infrastructure is associated with declining inequality. (Steenbergen V. and T Tran, 2020, 91)

FDI transfers capital to the host country, which leads to a reduction in capital returns and an increase labour returns. On the other hand, foreign capital competes with local capital to absorb the local labor force, which leads to raising wages and reducing the profitability of local companies. This effect would reduce income inequality by narrowing the gap between wage returns and capital returns. (Suanesm M., 2016, 49)

Empirical studies by (Rezk H. et al, 2021; Ravinthirakumaran K. and N. Ravinthirakumaran, 2018; Ucala M., et al, 2016) reinforce the role of FDI in reducing income inequality. (Farhan M. et al, 2014) found mixed results in the case of ASEAN countries. FDI inflows had a pro-poor distribution effect in Malaysia, Philippines and Thailand. Meanwhile, results from Singapore and Indonesia show that FDI perpetuates inequality. These results suggest that the returns and costs of FDI vary with different economic environments between countries.

- **FDI increase income inequality**

According to the North-South model[1], FDI increases income inequality. The countries of the South have a comparative advantage in the production of inputs that require intensive use of unskilled labour, such as the production of intermediate inputs, while the North specializes in the relatively intensive inputs of skilled labour. The availability of relatively low-cost labor in the south encourages multinational corporations from the north to invest vertically by moving labor-intensive parts of the production process to the south. However, even if, from the perspective of the North, the activities carried abroad were those that required relatively unskilled labour, these activities from the perspective of the South, required relatively skilled labour. Hence, incoming FDI would increase the relative demand for skilled labor in the host country, thus widening wage inequality. (Le Q. et al, 2021, 3; Ravinthirakumaran K. and N. Ravinthirakumaran, 2018, 60; Couto, V., 2018, 6)

FDI raises the relative wages of skilled workers in the host country by bringing in skills-biased technology. In addition, the capital-intensive methods used by foreign investors promote unemployment among unskilled workers and distort income distribution by creating an economy with an advanced small sector

[1] The North-South model, developed by Ronald Findlay, is a model in development economics that explains the growth of the economies of the less developed countries of the South stimulated by trade with the more developed countries of the North.

and a large underdeveloped sector. (Ravinthirakumaran K. and N. Ravinthirakumaran, 2018, 60; Rezk H. et al 2021,9; Tsaurai K., 2020,9)

On the other hand, the dependence of foreign investments on technology that requires skilled labor will push for an increase in the wages of skilled workers in regions and industries with a higher presence of foreign direct investment. Given that most developing countries have significant restrictions on the movement of workers between regions, FDI can lead to another form of inequality, it is geographical inequality. (Steenbergen V. and T Tran, 2020, 91-92)

FDI affects not only capital and labor returns, but also the number of jobs. The impact of FDI on job creation depends on the investment method. In the case of "greenfield investments", additional jobs will be created. In the case of a takeover, the effect of foreign investment on the number of jobs is unclear, although there are many indications that it is negative. This fact is of particular interest to the poor, since they usually have only their unskilled labor power. The creation or destruction of jobs depends on the degree of labor intensity in the production process employed by the multinational companies in the host country. (Hemmer H., et al, 2005, 3; Tsaurai K., 2020, 9) The presence of multinational companies can also reduce the market share of local companies. As profit falls, local firms are forced to lower their cost by lowering the level of wages and the number of workers they can hire to stay in the market. (Farhan M., et al, 2014, 602)

Empirically, the results of (Choi c., 2006; Nunnenkamp P. et al, 2006; Couto V., 2018; Suanesm M., 2016; Fazaalloh, A. M. 2019) proved that FDI had a negative impact on income distribution.

The results of (He W., 2015) were mixed, as trade openness led to a widening of the income gap in the BRICS countries in general. However, individual results for each country varied from country to country. It has been found that the income gap in Brazil, South Africa and China has widened after joining the WTO. Whereas, the income gap in India narrowed after joining the World Trade Organization. In Russia, trade openness has been accompanied by a high-income gap since 1989.

- **Nonlinear Relationship**

According to modernization theory, the influx of FDI exacerbates income inequality in the early stages of economic development. It initially stimulates growth in some leading sectors and regions, and provides benefits for skilled labour, but the income inequality gap decreases in the long-run in response to more influx of FDI as the country's economic development approaches an optimum stage. Hence, the relationship between FDI and income inequality is U-shaped according to Kuznets hypothesis. (Hemmer H., et al, 2005, 3; Ravinthirakumaran K. and N. Ravinthirakumaran, 2018, 60; Rezk H. et al 2021,9; Tsaurai K., 2020, 9; Le Q. et al, 2021, 3)

FDI has positive but disproportionate effects on the labor markets of host countries. FDI is associated with an increase in aggregate employment and a rise in average wages. In the short term, many of these benefits accrue to highly

skilled workers, while low-skilled workers may experience negative effects. However, FDI may change local standards regarding business conditions. In the long run, this may prompt the workforce to seek additional education and training. (Steenbergen V. and T Tran, 2020, 92; Le Q. et al, 2021, 3)

The empirical results that reinforced this view were presented by (Figini, p, Gőrg, 2011; Alfred A, Haug, 2014; Le Q. et al, 2021; Chintrakarn P. et al, 2010).

On the other hand, results by (Tsaurai K., 2020; Hemmer H., et al, 2005) did not prove the existence of a significant relationship between FDI flows and income distribution.

3. Relationship Between FDI and Income Distribution in the Selected Developing Countries:

- **FDI Ratio in the Selected Developing Countries**

Table (1) presents the descriptive statistical measures of FDI ratio for the selected developing countries (2000-2020).

Table (1): Statistical Measures of FDI Ratio in Developing Countries (2000-2020)

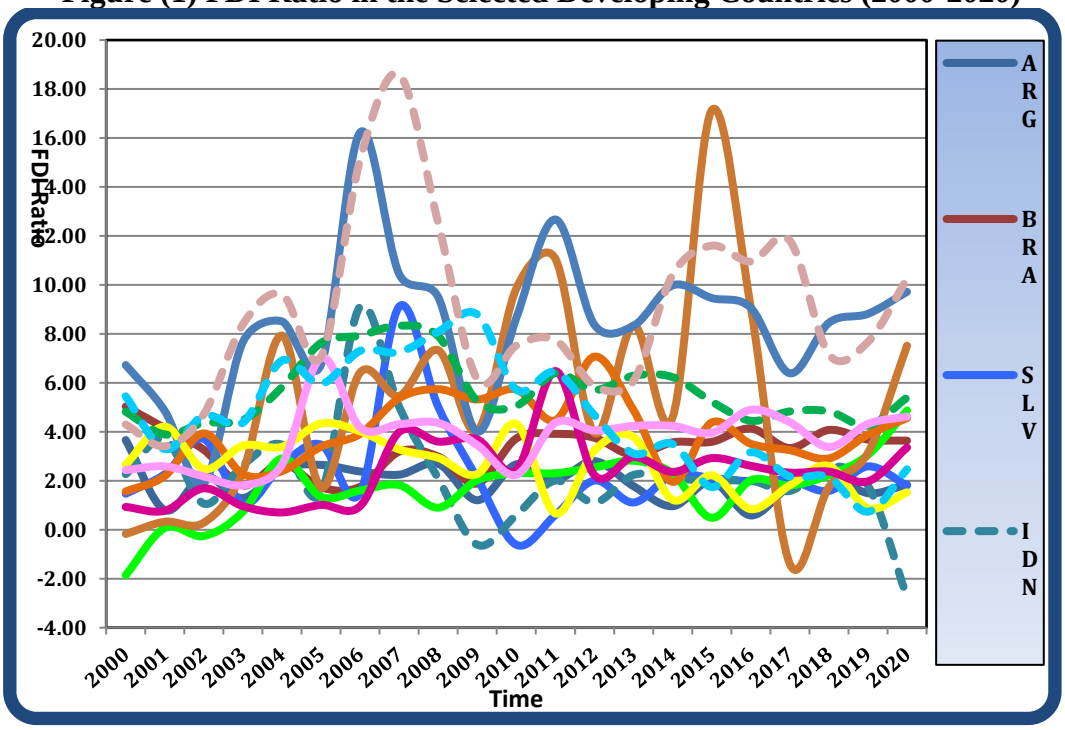
Country	N	Minimum	Maximum	Mean	Std. Deviation
Argentina	21	0.584750	3.665791	1.993969	0.753530
Armenia	21	0.738298	8.788695	4.665664	2.272765
Belarus	21	0.707732	6.480802	2.399997	1.383311
Brazil	21	1.733901	5.034129	3.286533	0.888743
Colombia	21	1.817908	7.028893	3.797821	1.190682
Croatia	21	3.892336	8.337426	5.673001	1.323043
Georgia	**21**	**3.412705**	**18.59939**	**8.904080**	**3.710645**
Honduras	21	3.389872	8.650223	5.608889	1.543533
Indonesia	**21**	**-2.757440**	**3.060000**	**1.355417**	**1.525857**
Kyrgyz Rep.	21	-1.391844	17.13123	5.275917	4.483155
Panama	21	1.901601	16.22949	8.405363	2.960263
Peru	21	1.564790	7.071142	3.939763	1.445127
El Salvador	21	-0.613406	9.114347	2.372848	1.923714
Thailand	21	0.667087	4.339584	2.676022	1.181486
All	294	-2.757440	18.59939	4.311092	3.065039

Source: authors' work/ EViews-10 program outputs

It is noted from Table (1) that Georgia witnessed the highest FDI ratio during the period (2000-2020), as it amounted (8.90%). The lowest value was (3.41%) in (2001), while the largest in (2007) amounted to (18.60%). The value of the standard deviation reached (3.71%) in Georgia, this indicating the large variance of FDI ratio during the period (2000-2020). While Indonesia witnessed the lowest FDI ratio during the period (2000-2020), as its average during the study period amounted (1.56%). The lowest value was (-2.76%) in (2000), while the largest value of FDI ratio was reached (3.06%) in (2020). The value of the standard deviation was (1.53%), which is a relatively large value and indicates the variance of FDI ratio during the period (2000-2020). As for the rest of the countries, the average FDI ratio varied between Georgia and Indonesia. In general, the average FDI ratio for all selected developing countries during the period (2000-2020) was approximately (4.31%), with a standard deviation of (3.06%).

Figure (1) shows the development of FDI ratio in the selected developing countries (1990-2020). The fluctuations are large in Georgia, Kyrgyzstan, and Panama. While it was less severe in Armenia, El Salvador, Honduras, and Indonesia. but the fluctuations were slight in Argentina, Belarus, Brazil, Colombia, Croatia, Peru, and Thailand. The general feature of FDI flows in developing countries is the sharp fluctuation from year to year and the great variation between countries in the amount of FDI ratio.

Figure (1) FDI Ratio in the Selected Developing Countries (2000-2020)



Source: authors' work/ EViews-10 program outputs

- **Income Distribution in Developing Countries:**

The common measure of income inequality can be derived from a comparison the share of the richest 20% of income with the share of the poorest 40% of income. (Todaro, 2012, 219) Therefore, we adopted the criterion of the income share held by poorest 40% as a ratio of the income share held by richest 20%. An increase in this ratio reflects a more equitable distribution of income, while its decrease indicates an increase in income inequality.

Table (2) presents the descriptive statistical measures for the income distribution estimated as the income share held by the poorest 40% divided by the income share held by the richest 20% in the selected developing countries (2000-2020).

Table (2) Descriptive Statistical Measures of the Income Distribution in the Selected Developing Countries (2000-2020)

Country	N	Minimum	Maximum	Mean	Std. Deviation
Argentina	21	0.399654	0.663430	0.545631	0.072357
Armenia	21	0.606987	0.848000	0.736861	0.072349
Belarus	21	0.790281	0.924963	0.868301	0.042117
Brazil	21	0.315549	0.410852	0.375296	0.025979
Colombia	21	0.321027	0.444568	0.389815	0.034326
Croatia	21	0.409171	0.487524	0.455362	0.019155
Georgia	21	0.601732	0.687793	0.647937	0.025228
Honduras	21	0.332273	0.555556	0.420055	0.059312
Indonesia	21	0.572705	0.810390	0.661956	0.068879
Kyrgyz Rep.	21	0.645880	0.864865	0.793211	0.057697
Panama	21	0.364393	0.464079	0.416201	0.029620
Peru	21	0.395147	0.599868	0.503655	0.060351
El Salvador	21	0.103321	0.312340	0.200780	0.064074
Thailand	21	0.545272	0.700935	0.613879	0.052391
All	294	0.103321	0.924963	0.544924	0.185774

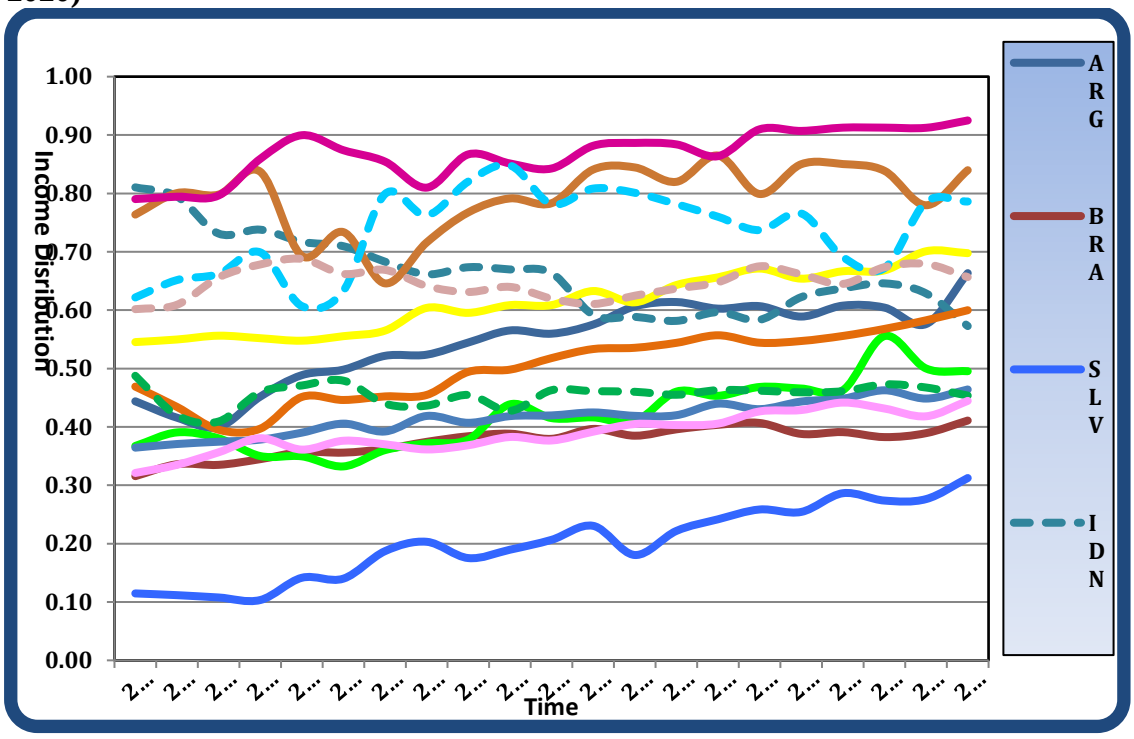
Source: authors' work/ EViews-10 program outputs

It is noted from Table (2) that Belarus witnessed the least variance in the income distribution as measured by (with a poorer income share (40%) relative to a richer share (20%) compared to the rest of the selected developing countries. The average of this indicator during the study period was (86.83%). The lowest value of the index was (79.03%) in (2000), while the largest value of the index was in (2020) where it reached (92.50%). In Belarus during the period (2000-2020), El Salvador witnessed the highest disparity in income distribution, where the average indicator during the study period was (20.08%), the lowest value for the indicator was (10.33%) in (2003), while the largest value for the indicator It was in the year (2020), as it reached (31.23%), and the standard deviation of the income distribution index was (6.41%), which is a low value that indicates the

convergence of the values of income distribution in Colombia during the period (1995-2020). In general, the average values of the income distribution during the period (2000-2020) amounted to approximately (54.49%), with a standard deviation of (18.58%).

Figure (2) shows the income distribution index for the selected developing countries group (2000-2020). The figure shows clear fluctuations in the income distribution index for the majority of the selected countries, with a positive general trend and some countries' efforts to improve the index during the study period, while we find a decline in the index's value for some other countries (such as Honduras and Croatia). It also notes that El Salvador witnessed the lowest inequality in the distribution of income, while Belarus had the highest inequality in the distribution of income. The figure generally shows that the income distribution tends to improve year after year in all selected developing countries. It also reflects the great disparity between countries in the extent of inequality in the distribution of income.

Figure (2) Income Distribution in the Selected Developing Countries (2000-2020)



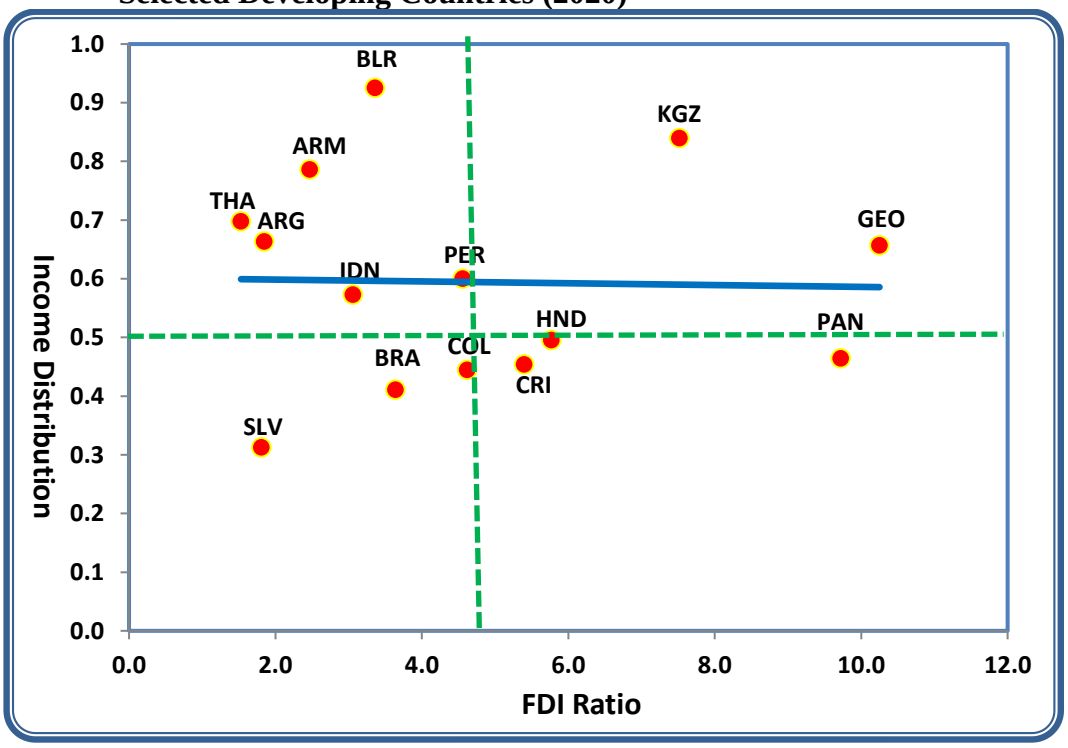
Source: authors' work/ EViews-10 program outputs

- **Relationship Between FDI Ratio and Income Inequality**

Figure (3) reflects the relationship between FDI ratio and income distribution in developing countries (2020). The average ratio of FDI ratio adopted (4.68%) as a cut-off for classifying developing countries into countries with a high FDI ratio

(above the average), and countries with a low FDI ratio (below the average). Also, a ratio of (0.50) was adopted for the income share of the poorest 40% of the population as a percentage of the income share of the richest 20% of the population, as a cut-off for classifying developing countries into countries with low inequality (above the average) and countries with large inequality (below the average).

Figure (3) Relationship Between FDI Ratio and Income Distribution in the Selected Developing Countries (2020)



Source: authors' work/ EViews-10 program outputs

From Figure (3), four groups of countries can be distinguished:

- group 1: countries in which the proportion of low foreign direct investment is accompanied by a large disparity in the distribution of income. It includes three countries: El Salvador, Brazil and Colombia. Gives a perception that investment has a positive impact on income distribution.

- group 2: countries in which low foreign direct investment is associated with low inequality in income distribution. It includes six countries: Thailand, Argentina, Indonesia, Peru, Belarus, and Armenia.
- group 3: countries in which high foreign direct investment is associated with a large disparity in the distribution of income. It includes three countries: Costa Rica, Honduras and Panama. It turns out that foreign direct investment exacerbates the inequality of distribution. This negative relationship is explained by the fact that FDI ratio do not provide new job opportunities, as they are capital-intensive investments that are concentrated in the primary and extractive sectors.
- group 4: countries the high FDI ratio is associated with low inequality in the distribution of income. It includes two countries: Kyrgyzstan and Georgia.

The general trend line represents the relationship between the FDI ratio and the income distribution takes a decreasing direction, meaning that FDI contributes to increasing the income inequality in developing countries.

4. Data and Methodology:

The research analyzes the effect of FDI on income distribution in developing countries. Adopts a fixed effects model, using panel data for fourteen developing countries, Argentina, Armenia, Belarus, Brazil, Colombia, Croatia, Georgia, Honduras, Indonesia, Kyrgyz Rep., Panama, Peru, El Salvador and Thailand, for the period 2000-2020. The data collected from World Bank, World Development Indicators. The selected countries represent all developing countries for which the data required for analysis are available.

There are many variables affecting income distribution that are categorized into macroeconomic variables, political economy variables, and demographic variables. (Deyshappriya, 2007, 4-6) The regression model used has been designed to take into consideration, in addition to the effect of FDI ratio, the effect of other variables, namely, unemployment rate, government expenditure rate and Inflation rate. The model takes the following form:

$$IND_{it}=\beta_0+\beta_1 FDI_{it}+\beta_2 UNE_{it}+\beta_3 GEX_{it}+\beta_4 INF_{it}+U_{it} \quad \ldots\ldots\ldots (1)$$

$$; \ i=1,2,\ldots,n \ ; \ t=1,2,\ldots,T$$

Where:

IND: the dependent variable representing the income distribution expressed as the income share of the poorest 40% as a proportion of the income share of the richest 20%.

It is worth noting that a common measure of income distribution that can be derived from the Kuznets curve is the proportion of incomes received by the top 20% and bottom 40% of the population. It is sometimes called the Kuznets ratio after Nobel Prize winner Simon Kuznets. This ratio is often used in empirical research as a measure of the degree to which income distribution varies between high- and low-income groups in a country. For this reason, the income ratio of the

poorest 40% to the incomes of the richest 20% was used as a measure of income distribution in this study. (Todaro M. and S. Smith, 2015, 209)
FDI: foreign direct investment as a percentage of GDP.
UNE: unemployment rate.
GEX: government spending as a percentage of GDP.
INF: inflation rate.
β1, β2, β3, β4: estimated parameters.
U: is the error term or, the random variable, it includes all other unmeasured variables and those that are not included in the model that have an impact on income distribution.

5. Estimation Results

- **Stationary Test:**

Table (3) presents the results of the Levin-Len-Shaw (LLC) test for the stationary of the model variables for the period (2000-2020).

Table (3): Results of the Unit Root (LLC) Test for the Model Variables

	Original Variable (Level)	
	Individual Intercept	**Indiv. Inter. & Trend**
IND	-1.961** (0.025)	-3.724*** (0.000)
FDI	-8.675*** (0.000)	-7.977*** (0.000)
UNE	1.499* (0.067)	1.518* (0.064)
GEX	-4.963*** (0.000)	-5.628*** (0.000)
INF	-11.239*** (0.000)	-16.231*** (0.000)

The values in parentheses represent the p-value
*** Significant at 10% level**
**** significant at 5% level**
***** significant at 1% level**

Source: authors' work/ EViews-10 program outputs
The results in Table (3) show that all model variables are stationary at the level.

- **Model Estimation**

Table (4): Models Estimation Results

Panel Data			
cross-section included:14	sample: 2000-2020		total panel observations: 294
Variables	Pooled Regression Model (PRM)	Fixed Effects Model (FEM)	Random Effects Model (REM)

	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.296933	0.002	0.565329	0.000	0.687053	0.000
FDI_t	-0.002859	0.446	-0.000965	0.000	0.000516	0.004
UNE_t	0.004820	0.039	-0.002389	0.000	0.000900	0.127
GEX_t	0.001808	0.057	3.53E-05	0.775	-0.002317	0.003
INF_t	0.003284	0.000	-0.000148	0.001	-0.000651	0.467
R^2	0.102914		0.844181		0.066650	
R^2-Adj	0.090498		0.842024		0.053731	
F-statistic	8.2886**		16761.71**		5.15932**	
Prob (F-statistic)	0.000		0.000		0.000	
D.W	0.064344		1.892015		0.824533	

Source: authors' work/ EViews-10 program outputs

- **Differentiation Between Estimated Models:**

For the purpose of differentiating between pooled regression model (PRM) and fixed effects model (FEM), Fisher (F) test was used, the result shown in table (5):

Table (5): Results of the Fisher (F) Test for Differentiation Between (PRM) & (FEM) Models

Redundant Fixed Effects Tests Test cross-section fixed effects			
Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	12039.529**	(13,276)	0.000
** **significant at 1% level**			

Source: authors' work/ EViews-10 program outputs

The results presented in table (5), and depending on the probabilistic value of the (F) test, which is (0.000), which is less than (1%), which indicates that the test is significant at the level (1%), and therefore the fixed effects regression model is better than the pooled regression model.

For the purpose of differentiating between the fixed effects model (FEM) and the random effects model (REM), we use the Hausman test, where the test results shown in table (6):

Table (6): Results of Hausman Test for Differentiation Between (FEM) & (REM) Models

Correlated Random Effects - Hausman Test Test cross-section random effects			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**

Cross-section random	11.1553*	4	0.025
Cross-section random effects test comparisons:			

Variable	Fixed	Random	Var(Diff.)	Prob.
FDI_t	-0.000965	0.000178**	0.000000	0.000
UNE_t	-0.002389	0.000589**	0.000000	0.000
GEX_t	3.53E-05	0.000787*	0.000000	0.037
INF_t	-0.000148	0.000895**	0.000000	0.004

****** **significant at 1% level**
***** **significant at 5% level**

Source: authors' work/ EViews-10 program outputs

It is clear from table (6) that Hausman test is significant at (5%), and it is noted that the probabilities of all differences between fixed and random effects were less than (5%), which means that these differences are statistically significant at the level (5%). So, this indicates that the fixed effects model is better than the random effects model to estimate the relationship between explanatory variables and the income distribution.

Analysis of the Model Results:

The impact of explanatory variables (foreign direct investment ratio, unemployment rate, government spending ratio, inflation rate) on the income distribution in developing countries during the period (2000-2020) which is presented in Table (4) can be shown as follows:

FDI has a significant negative impact on income distribution in developing countries at (1%). the change in FDI by (1%) lead to an adverse impact on income distribution by (0.096%). This result indicates that FDI ratio in developing countries lead to increase income inequality and expansion of the income gap between the poor and the rich. The reason for this is that foreign direct investment is mostly capital intensive and uses modern technologies, and requires skilled labor only, which widens the gap between skilled and unskilled workers. This result is consistent with the theoretical idea claims that foreign direct investment leads to distributional effects that are not in favor of the poor, it also reinforces the research hypothesis. As well as, when FDI takes the form of mergers and acquisitions, as these activities are often accompanied by the restructuring of merged companies, This will be reflected in high unemployment rates and thus a decrease in the income share of the poor. (UNCTAD, 1999, 261).

On the other hand, the Hecksher-Ohlin Model showed that one of the most important negative effects of FDI flows to developing countries is the abundance of unskilled labor in these countries, which causes lower relative wages for labor-intensive products (Hemmer, et al, 2002, 6-7).

Unemployment has a significant negative effect on the income distribution in developing countries at (1%). When the unemployment rate increases by (1%), this leads to a decline in the income share of the poorest (40%) as a proportion to

the income share of the richest (20%) by 0.239%. This result indicates that when the unemployment rate increases in developing countries, the poor segment will be the most affected, as this will lead to a decrease in the income share of this segment, unlike the rich class that may not be affected or have a relatively low damage compared to the poor segment.

There was no significant effect of government spending on income distribution in developing countries. The reason for this may be the weakness of financial policy tools aimed at redistributing income in developing countries, such as transfer expenditures, where many goals are advanced, such as taking care of the budget deficit, securing high revenues, and paying debts...etc. In addition, the tax systems in developing countries are usually based on reliance on indirect taxes that fall on the poor, and thus increase the inequality in income distribution.

Inflation has a significant negative effect on the income distribution in developing countries at (1%). An increase in the inflation rate by (1%) leads to a decrease in the income share of the poorest (40%) as a ratio of the income share of the richest (20%) by 0.015%. This result shows, that the poor segment in developing countries will be the most affected by inflation. Which means widening the gap between the different income groups. Besides, price increases tend to rise at higher rates than wage increases in developing countries. Therefore, inflation shifts income towards profits and away from wage earners. Hence, inflation increases income inequality because it harms the poor class of the population more than the rich class.

Intercept value indicates that in the absence of the influence of economic variables on income distribution model, the income shares of the poorest (40%), will represent (56.5%) of the income share of the richest (20%).

The explanatory power of the model indicates that (84%) of the changes that occur in the income share of the poorest (40%) of the population as a ratio of income share of the richest (20%) can be attributed to economic variables (FDI ratio, Unemployment rate, government spending ratio, and inflation rate). The results show also that the F-test value is significant at 1%. D.W test value is close to 2, which confirms that the model is free from the autocorrelation.

- **Statistical Tests:**

I. Testing the Autocorrelation:

Table (7) presents the results of the (Breusch-Pagan LM) test for the autocorrelation between the residuals of the income distribution model for the developing countries.

Table (7): Results of the Breusch-Pagan LM test for autocorrelation between the residuals

Residual Cross-Section Dependence Test Series: RESID Null hypothesis: No cross-section dependence (correlation) Periods included: 21

Cross-sections included: 14			
Test	**Statistic**	**d.f.**	**Prob.**
Breusch-Pagan LM	0.3260$^{n.s}$	91	1.000
n.s not significant			

Source: authors' work/ EViews-10 program outputs.

The probabilistic value of the test was (1,000), which is greater than the level of significance (5%), which means that the null hypothesis is accepted, which states that the residuals of the estimated model are free from the autocorrelation problem.

II. Testing the heterogeneity of variance:

Table (8) presents the results of the possibility ratio test (LRT) for the heterogeneity of the residual variance of the income distribution model for the developing.

Table (8): Results of Possibility Ratio Test (LRT) for the Heterogeneity of the Residual Variance

Panel Period Heteroskedasticity LR Test Specification: IND FDI UNE GEX INF C Null hypothesis: Residuals are homoscedastic			
	Value	**Df**	**Prob.**
Likelihood ratio	5.3609$^{n.s}$	14	0.98
LR test summary:			
	Value	**Df**	
Restricted LogL Unrestricted LogL	94.1656 96.8460	289 289	
n.s not significant			

Source: authors' work/ EViews-10 program outputs

Depending on the probability value of the possibility ratio test (0.98), which was greater than (5%), which means that the result of the LRT test is not significant, and this indicates the homogeneity (stability) of the variance of the residuals of the estimated model.

III. Testing the Multicollinearity:

Table (9) shows the matrix of partial correlation coefficients (Pearson) among the model variables.

Table (9): the Matrix of Partial Correlation Coefficients (Pearson)

	FDI_t	UNE_t	GEX_t	INF_t
FDI_t	1.0000	0.1085	0.4171	-0.1649
UNE_t		1.0000	0.2497	0.1067
GEX_t			1.0000	-0.1303
INF_t				1.0000

Source: authors' work/ EViews-10 program outputs .

Based on the (Kline) test, and when comparing R^2 for the estimated model whose value is appeared in Table (4) amounting to (84%) with the squares of the correlation coefficients in the above matrix, we find that the R^2 is greater than all the squares of the partial correlation coefficients. this indicates the absence of the estimated model from multicollinearity.

6. Conclusion and Policy Implications:

FDI in developing countries exacerbates the problem of inequality in the income distribution and widens the income gap between the poor and the rich in society. because foreign direct investments are concentrated in the primary and mining sectors, therefore the impact of FDI will not be reflected in creating new job opportunities because investment in these sectors is capital intense. This result is consistent with the research hypothesis and the results of some previous studies that showed that FDI flows to developing countries may generate negative effects on unemployment and poverty. On the other hand, when foreign direct investment takes the form of mergers and acquisitions, as these activities are often accompanied by the restructuring of merged companies, this will be reflected in high unemployment rates and thus a lower share of income for the poor class of society.

Unemployment in developing countries harms the poor. As this will lead to a decrease in the income share of this class, unlike the rich class that may not be affected or have a relatively low damage compared to the poor.

The results did not prove a significant effect of government spending on income distribution in developing countries. This means that the state does not direct expenditures, including transfers, in an efficient manner to influence the inequality in income distribution. In addition to the fact that most of the government revenues are derived from indirect taxes that fall on the poor, which exacerbates the inequality in income distribution.

Inflation widens the income distribution gap and reinforces income inequality in developing countries. The high rate of inflation negatively affects the purchasing power of incomes especially for those with limited and fixed incomes, most of whom are poor.

FDI lead to the withdrawal of local companies due to their inability to compete with foreign companies that depend on the capital-intensive method that attracts skilled labor with high wages and production capacities, unlike local companies that use unskilled labor with low wages and production capacity, which leads to the loss of job and increase unemployment rate.

Based on the above results, the following recommendations can be made:

FDI flows can be used as a political tool in redistributing income in developing countries by taking the necessary measures to attracting foreign investment to all economic sectors. Giving preferential concessions to investments that contribute to the employment of local work force.

Paying attention to the type of FDI and focusing on new investments with front and back links in the economy so that foreign investment is reflected in the operation of the rest of the economy sectors on the one hand, and increased employment on the other hand.

Developing countries should direct domestic investments to establish joint projects with foreign companies. In order to enable it to achieve the required distributional goals, by reducing the productivity gap between foreign and local companies.

Make benefit from the technological expertise and skills transferred by FDI through the establishment of training and rehabilitation workshops, for the purpose of enhancing capabilities by acquiring competitive experience and productive efficiency.

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